A MONOGRAPH OF THE PHEASANTS

BY

WILLIAM BEEBE

VOLUME IV.

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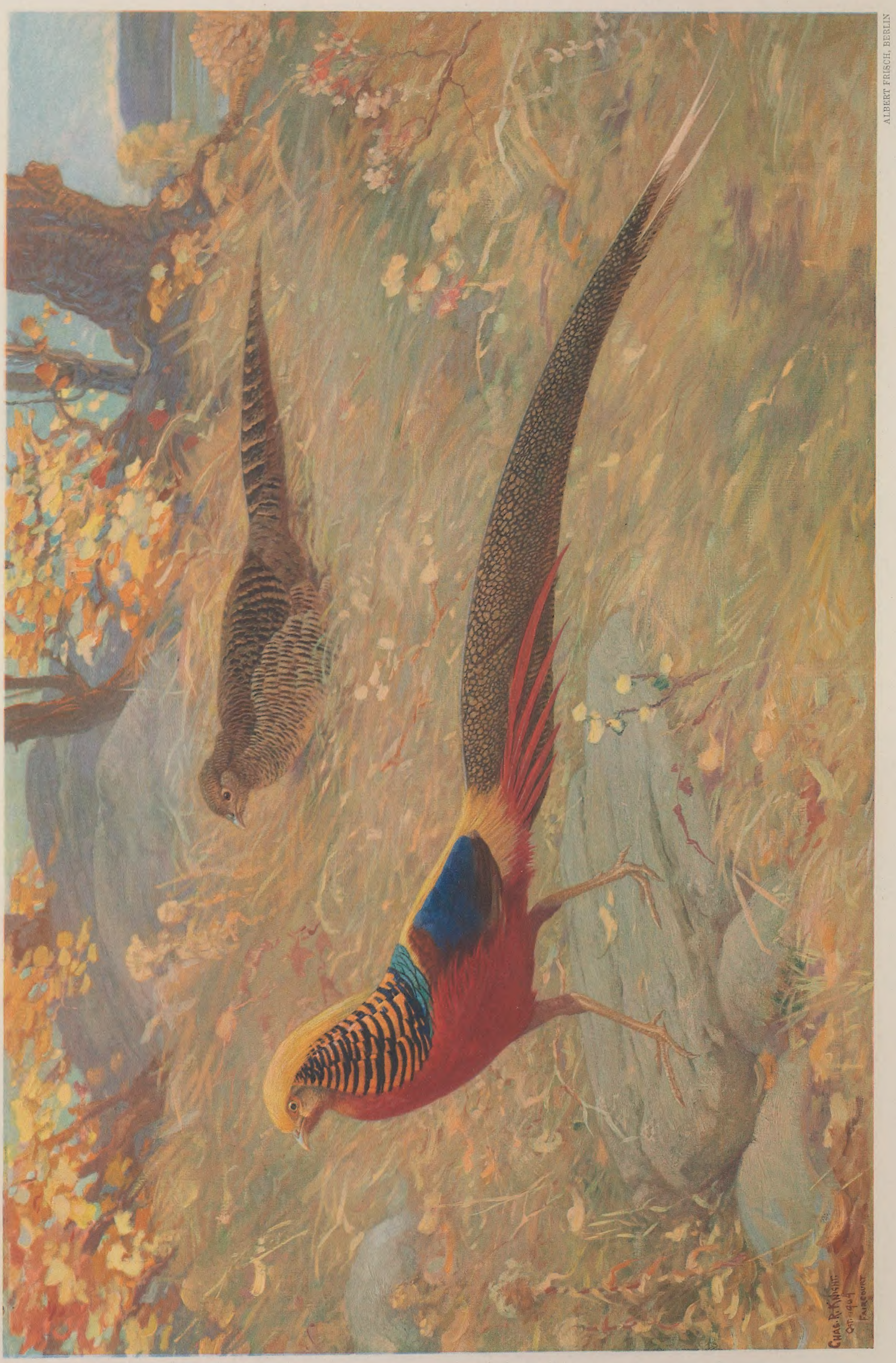
A MONOGRAPH OF THE PHEASANTS

PLATE LXIX.



CHAS. R. KNIGHT
OCT. 1904
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GOLDEN PHEASANT.

GOLDEN PHEASANT

Chrysolophus pictus (Linnaeus)

Few white men have ever seen a Golden Pheasant in its wild home, for it haunts the deepest mountains of Central China. No one has yet found its nest and eggs, yet in captivity it thrives and breeds freely, and is one of the most beautiful birds, which any amateur can keep and rear easily.

A MONOGRAPH OF THE PHEASANTS

BY

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COLOURED PLATES

PLATE LXIX. GOLDEN PHEASANT *Chrysolophus pictus* (Linnaeus) *Frontispiece*

Painted by C. R. Knight.

Few white men have ever seen a Golden Pheasant in its wild home, for it haunts the deepest mountains of Central China. No one has yet found its nest and eggs, yet in captivity it thrives and breeds freely, and is one of the most beautiful birds, which any amateur can keep and rear easily.

PLATE LXX. PLUMAGES OF THE GOLDEN PHEASANT *Chrysolophus pictus* (Linnaeus) . . . . *Facing page* 16

Painted by H. Grönvold.

FIG. 1. Chick in down with sprouting mantle and wing-feathers of the next plumage.
FIG. 2. Male juvenile plumage, closely resembling that of the adult female.
FIG. 3. Male in first-year plumage, showing hint of the ruff and the scarlet pigment. The tail is the last to be moulted, so it is closest in pattern and pigmentation to that of the adult bird.

PLATE LXXI. PLUMAGES OF THE BLACK-THROATED GOLDEN PHEASANT *Chrysolophus pictus*, var. *obscurus* . . . . . *Facing page* 22

Painted by H. Grönvold.

FIG. 1. The mutational changes are more marked in the chick than in any later plumage, there being no resemblance to the normal colours.
FIG. 2. The juvenile male plumage is much darker than that of the normal Golden Pheasant.
FIGS. 3 and 4. The adult male and female, although considerably darker, yet show the same general markings as the normal birds. The most radical divergences are in the face, throat and upper breast, which are smoky black in this variety.

PLATE LXXII. LADY AMHERST PHEASANT *Chrysolophus amherstiae* (Leadbeater)

Painted by C. R. Knight. *Facing page* 26

To steep, wild valleys and ravines of icy mountain torrents come the Amherst Pheasants to feed. The cocks, in all their glory of ruff and body plumage, are beautiful beyond description, the scarlet side-feathers glowing like shafts of rubies, and the eyes, matching the black and white of the cape, gleaming with the very essence of the wilderness.

PLATE LXXIII. VARIATIONS IN GOLDEN AND AMHERST PHEASANT HYBRIDS . . . . *Facing page* 32

Painted by H. Grönvold.

Two general types result from crossing Golden and Amherst Pheasants, one with a pale, bluish-white, red-tipped ruff, the other with the cape more of the Golden pattern.

PLATE LXXIV. MALAY BRONZE-TAILED PEACOCK PHEASANT *Chalcurus inopinatus* Rothschild . . . . *Facing page* 42

Painted by L. A. Fuertes.

These pheasants creep through the dense jungles among the damp undergrowth, or fly up to the highest, isolated dead trees, from which they watch the sun setting across the wilderness of Malay mountains.

PLATE LXXV. SUMATRA BRONZE-TAILED PEACOCK PHEASANT *Chalcurus chalcurus* (Lesson) . . . . *Facing page* 50

Painted by G. E. Lodge.

Living in the unknown hinterland of the mountains of Sumatra, almost nothing is known of the habits of this bird. No white man has ever seen it alive, and the few skins have been obtained from natives who have snared them as they came down near their villages in search of food.

PLATE LXXVI. GREY PEACOCK PHEASANT *Polyplectron bicalcaratum bicalcaratum* (Linnaeus) . . . . *Facing page* 56

Painted by G. E. Lodge.

Singly or in small families these birds are found among the mountains of Burma and Western China. It is difficult to see them, for their senses are very keen, and they are never off guard. They are shielded by terrible growths of thorn cane, or when approach seems easy, a flock of babblers will discover you, give warning, and send the pheasants off with a rush. They scarcely ever fly, but skulk through the jungle, ascending trees only to roost upon a limb at night.

PLATE LXXVII. GERMAIN'S PEACOCK PHEASANT *Polyplectron bicalcaratum germaini* Elliot . . . . *Facing page* 74

Painted by L. A. Fuertes.

Where the Peacock Pheasants extend their range southward through Siam into the humid, semi-tropical forests of Cochin-China, they become darker in general coloration, with the eyed spots more intense and brilliant. The transition is gradual, so that while the two extremes are quite distinct, it is possible to separate them only sub-specifically. In habits and nesting they are identical.

PLATE LXXVIII. MALAY PEACOCK PHEASANT *Polyplectron malaccensis* (Scopoli)

Painted by G. E. Lodge. *Facing page* 76

Many decades will pass before the last Malay Peacock Pheasant is driven from its haunts. It is guarded so well by a host of tropical terrors, which rise at every foot and dispute one's advance into its realm, that until the last mile of fever swamp is drained and the last valley cleared of its leech-filled underbrush these pheasants will exist, skulking through the jungles and carrying on their small businesses of life hidden from all save the lowly forest folk. It is a land of dreadful silences, filled with gorgeous birds and butterflies, where man alone finds life unbearable.

PLATE LXXIX. BORNEAN PEACOCK PHEASANT *Polyplectron schleiermacheri* Brüggemann . . . . *Facing page* 88

Painted by G. E. Lodge.

This is the most brilliant of the Burmese group of Peacock Pheasants. It is found in hilly jungle near the centre of Borneo, in the same country as the Argus Pheasant, but it is rare everywhere, and unknown even to many of the native Dyak hunters.

PLATE LXXX. PALAWAN PEACOCK PHEASANT *Polyplectron napoleonis* Lesson

Painted by L. A. Fuertes. *Facing page* 92

The most brilliant and specialized of the entire genus, and confined to the small island of Palawan. Only a few specimens have been secured, for most of those trapped by the natives are eaten by jungle cats before they can be saved.

PLATE LXXXI. MALAY OCELLATED PHEASANT *Rheinardius nigrescens* Rothschild . . . . *Facing page* 106

Painted by G. E. Lodge.

The most mysterious of all pheasants are the birds of this group. We live in their neighbourhood, we hear their calls, we find their dancing arenas, and yet, after weeks of search, may catch never a glimpse of the birds themselves. Night after night their call rings out a few hundred yards away, sounding much like the call of the Argus, but with a muffled resonance which is unmistakable. In appearance they recall some Chinese imaginary Phoenix.

Plate LXXXII. MALAY ARGUS PHEASANT *Argusianus argus* (Linnaeus)

Painted by A. Thorburn. *Facing page* 114

This great pheasant lives a solitary life deep in the wild jungles of the Malay Peninsula. The central tail-feathers measure six feet in length, while the secondary feathers of the wing are enormously lengthened and enlarged for the purpose of display in courtship. The cocks have no spurs, but trust to escape from danger by flight. Argus Pheasants are polygamous, and the cocks take no share in hatching the eggs or rearing the young birds.

Plate LXXXIII. EVOLUTION OF THE EYES ON THE WING-FEATHERS OF THE ARGUS PHEASANT . . . . *Facing page* 150

Painted by H. Grönvold.

The gradual development of the ocelli or eyed spots on the secondary wing-feathers is beautifully shown by the successive feathers themselves. Starting as a slight irregularity in the buff markings, the next stage shows two of these lines approaching and enclosing a dull reddish-brown stain. This takes form roughly circular, acquires a frame, and finally evolves into the marvellous eyes, large, round, illuminated from one side, shaded, so that when the feather is slightly vibrated they appear to revolve swiftly, like brilliant balls suspended in darkened sockets. These are all unquestionably brought into play in courtship, but the object of the delicate detail is a mystery, for it certainly does not affect the hen directly, either by artistic design or harmonious colour.

Plate LXXXIV. BORNEAN ARGUS PHEASANT *Argusianus grayi* Elliot

Painted by A. Thorburn. *Facing page* 132

The Bornean Argus has the white of the plumage clearer, and the breast is bright, rusty red instead of the dull chestnut of the Malay bird. The blue face and the red legs and feet are the brightest colours on the bird, but the plumage is a wonderfully harmonious combination of buff, white, brown and grey. When the wings are full spread the radiating lines of eyes appear as if illuminated from above, and when the bird vibrates its plumage, all appear to revolve in their sockets—perhaps the most remarkable sight to be found in the world of bird life.

Plate LXXXV. DOUBLE-SPOTTED ARGUS PHEASANT . . *Facing page* 152

Painted by H. Grönvola.

A. Primary feather of the Malay Argus Pheasant, *Argusianus argus.*
B. Primary feather of Double-spotted Argus Pheasant, *Argusianus bipunctatus* (Wood).

This feather differs from all other Argus wing-feathers in having dotted zones on both webs. It is in the collection of the British Museum, but we have no clue as to discoverer or locality.

PLUMAGES OF BORNEAN ARGUS PHEASANT

1. Chick in down.
2. Male in juvenile plumage.

Plate LXXXVI. INDIAN PEAFOWL *Pavo cristatus* Linnaeus . . *Facing page* 162

Painted by C. R. Knight.

Peafowl have been familiar to mankind ever since the Phoenicians brought them from India to the Pharaohs of Egypt. Throughout history we find them praised for beauty, accused of vanity and dreaded by the superstitious; while they, on their part, accept man and captivity with the disdain and unadaptability of the aloof race of cats.

In the colour of their plumage they vie with the most gorgeous of birds, and in their courtship and display they afford one of the most remarkable sights in the world of life. No matter how often we see these birds, we should never allow ourselves to become blind to the marvels which they present.

Plate LXXXVII. EVOLUTION OF THE EYES ON A PEACOCK'S TRAIN

Painted by H. Grönvold. *Facing page* 176

The beginnings of these marvellous ocelli must have been first visible on the plumage of some far-distant ancestor of all peafowl, perhaps a hundred thousand years ago. Yet to-day in the train of an individual bird we may clearly trace their development of pattern and pigment.

Beneath one of the pale, terminal cross bands which we find on the smaller feathers, there appears (on an adjoining feather somewhat farther down the train) a blur of chestnut, which draws gradually together, and, concentrating, reaches up the shaft into a slowly expanding, terminal area of green. The chestnut is soon cut off at the bottom by the surrounding green zone, and now shows as a small monochrome fan of warm colour. In the heart of this a tiny speck of metallic blue develops and widens, and within this, in turn, a dot of black. Here we have the eye in its simplest form—shall we imagine that it corresponds to that which peafowl displayed ten thousand years ago? The change to the fully perfected eye is chiefly by enlargement, by a slight bilobing of the pupil, and by the addition of lavender, golden, copper and emerald frames.

Plate LXXXVIII. WHITE PEACOCK . . . . *Facing page* 184

Painted by C. R. Knight.

These rarely beautiful birds are never found in a wild state, but are bred in captivity from birds showing a few white feathers. When at their best, these peafowl show hardly a particle of pigment; even the feather eyes being without their metallic copper and emerald. When the train is spread, however, and the light is just right, every detail of the eye pattern can be seen, appearing and reappearing like the successive ripples in watered silk.

Plate LXXXIX. BLACK-WINGED PEAFOWL . . . *Facing page* 186

Painted by G. E. Lodge.

This is a very remarkable sport or mutation occurring sporadically among domestic Indian birds, sometimes one or two in a whole brood. The cock is darker and the hen and chicks much whiter than wild birds, the pale colour in the two latter cases making it impossible for this form to hold its own against the many enemies of a life in the wild. Although the Black-winged Peacock cannot stand cold as well as the normally coloured birds, yet, in warm climates, it has been known to possess the advantage in courtship, and thus gradually to replace all the ordinary birds in a flock.

Plate XC. GREEN PEAFOWL *Pavo muticus* Linnaeus . . . *Facing page* 190

Painted by G. E. Lodge.

At early dawn, before the heavy dew has dried from the foliage of the Malay jungles, the peafowl awaken on their roosts on tall, bare trees, and standing in the first rays of the sun, shake a myriad drops from their plumage. They walk up and down the lofty branches, and half-spread their wings until the great plumes are dry. Then, with a single spring, they leap outward into space and scale down, down to the narrow opening among the trees which becomes a river.

Plate XV. PLUMAGES OF THE HIMALAYAN IMPEYAN PHEASANT *Lophophorus impeyanus* (Latham). (Omitted from Vol. I., p. 142.) . *Facing page* 216

Painted by H. Grönvold.

Fig. 1. Chick in natal down, with the wing- and tail-feathers just sprouting.
Fig. 2. Male in full Juvenile plumage.
Fig. 3. Male in First Year Plumage.
A. Dorsal Feather of First Year Plumage.
B. Dorsal Feather of Juvenile Plumage.

PHOTOGRAVURES

Photogravure 61. HOME OF THE GOLDEN PHEASANT . . *Facing page* 8

Photographs by William Beebe.

The steep, tumbled mountains of Szechuan, Shensi and Kansu, where the scrub bamboo offers an abundance of protection, and even the wild western Chinese tribes are seldom seen, the Golden Pheasant is at home. Streams rush through the bottoms of the twisting valleys, winds howl around the topmost peaks of these lonely mountains, and between, on the slopes and outjutting terraces, these dainty birds live and carry on their wonderful courtship; and here, upon their precious eggs, the hens sit close among the dead leaves and grass.

Photogravure 62. HAUNTS OF THE AMHERST PHEASANT IN YUNNAN

Photographs by William Beebe. *Facing page* 28

The home of this bird is a romantic and beautiful one in the very heart of Asia. Starting at a height of two miles above the sea, the melted snowflakes form most beautiful rushing torrents. The steep sides of these lofty ravines are the natural pathways of the hardy pheasants, living in company with bulbuls and babblers, amid orchids and trailing moss, roosting among the vines and swaying branches of the Chinese mountain forests.

Photogravure 63. HAUNTS AND NESTING-PLACE OF THE MALAY BRONZE-TAILED PEACOCK PHEASANT . . . . *Facing page* 46

Photographs by William Beebe.

The home of these birds touches the extremes of sunlight and shadow, from the stream-beds in the depths of the ravines, where all is dark and sunless, to the sunlit ridges where warmth and brilliance pervade all things. Here among golden and azure blossoms the Bronze-tails live.

At an elevation of thirty-two hundred feet in the mountains of Pahang, near a rocky defile, half-way up a steep slope, was the spot where a Bronze-tailed Peacock Pheasant had made its nest. Only broken eggshells remained, half sunken into the moss and leaves between two great fallen trees.

Photogravure 64. HOME, AND THE NEST AND EGGS OF THE GREY OR BURMESE PEACOCK PHEASANT . . . *Facing page* 60

Photographs by William Beebe.

During the height of the rains the hen Peacock Pheasants retire to the deepest, most secluded parts of the jungle; perhaps in some dense bamboo tangle. Here, on the ground, among ferns and moss and fallen leaves, she lays two white eggs, which are so conspicuous that they would attract every hostile eye, were it not that she sits close for three weeks, her brown mottled hues merging perfectly with the surrounding vegetation.

Photogravure 65. LATERAL COURTSHIP DISPLAY OF THE PEACOCK PHEASANT . . . . *Facing page* 62

Photographs by D. Seth-Smith.

The courtship of this bird is one of the most remarkable among birds. It combines the methods of the others. The first phase is a lateral display, like that of the junglefowl and typical pheasants, the cock approaching the hen from the side, and flattening itself to right or left in the direction of the object of its courtship.

Photogravure 66. FRONTAL COURTSHIP DISPLAY OF THE PEACOCK PHEASANT . . . . *Facing page* 64

Photographs by D. Seth-Smith.

As the courtship reaches its height the male assumes a frontal position, and increases the arc of spread of the wings and tail until they form a continuous circular fan of ocellated feathers, extending to the very ground on both sides. The hen is affected neither by the æsthetic beauties of this wonderful display, nor the regularity of form or pattern, but apparently by some subconscious reaction to the continued repetition of the courtship performance.

PHOTOGRAVURE 67. ROOSTING- AND FEEDING-PLACES OF THE MALAY PEACOCK PHEASANT . . . . . . *Facing page* 80

Photographs by William Beebe.

Deep in the Pahang jungles, following devious trails and led by savages, half Malay, half Sakai, I reached some wonderful limestone caverns. In the interstices pheasants roosted, and at the entrance small hawks brought snail-shells from the jungle, which they broke and devoured. Then followed flies and their maggots, and these in turn attracted the pheasants, which found this a plentiful and ever-renewed feeding-ground.

PHOTOGRAVURE 68. JUNGLE HOME OF THE MALAY OCELLATED PHEASANT . . . . *Facing page* 108

Photograph by William Beebe.

In one very deep, narrow gorge a cool rush of air for ever siphoned down from the highlands, soughing through the vine-draped limbs of a mighty jungle tree which reared its head high above the shadowed depths. From this place an Ocellated Pheasant called for six nights in succession, the sound apparently coming from the hillside some distance up the slope, if not from the branches of the great tree itself.

PHOTOGRAVURE 69. HOME AND UNFINISHED ARENA OF THE MALAY OCELLATED PHEASANT . . . . *Facing page* 110

Photographs by William Beebe.

Near the summit of a low rise in open jungle I found a small cleared space. This I discovered was the dancing arena of an Ocellated Pheasant, which had evidently met with disaster, for its bones and feathers were found near by. The clearing was a small one, probably the first attempt of an immature bird, for it was not on quite level ground, and a woody plant growing within its limits had resisted all attempts to uproot it.

PHOTOGRAVURE 70. JUNGLE HOME AND DRINKING-PLACE OF THE MALAY ARGUS PHEASANT . . . . . . *Facing page* 118

Photographs by William Beebe.

In my houseboat on the Pahang River I penetrated to the haunts of the Argus Pheasant, and at night, as I lay in my bunk, listened to their loud, persistent calling. It is a strong, penetrating, single note, *kweau!* and reaches far through the jungle, summoning the female, and doubtless at times inviting danger as well. It is possible to distinguish between the voices of adult and immature birds, and even between those of individuals when these are heard night after night.

At sunset, just before the calling begins, the birds come down to drink from some pool near the border of a stream.

PHOTOGRAVURE 71. NESTING JUNGLE AND RECENTLY USED NEST OF THE MALAY ARGUS PHEASANT . . . . *Facing page* 124

Photographs by William Beebe.

The only nest I could discover was a deserted one well up on a mountain slope in Pahang. There had been no attempt to collect materials, the eggs having been laid and hatched on the debris of the jungle floor. The surrounding growth was palm and bamboo, and the bird had worn a path to the nest through the thick underbrush, a trail which was even now perceptible, although the broken shells of the two eggs had begun to sink into the mould.

[This Plate has been lettered "Malayan Ocellated Pheasant" in error.]

PHOTOGRAVURE 72. BORNEO JUNGLE NEAR DANCING-PLACE OF ARGUS PHEASANT . . . . *Facing page* 134

HEAD AND EGG OF BORNEAN ARGUS PHEASANT

Photographs by William Beebe.

The dense Bornean jungle consists of tall, high-branching trees with thick undergrowth beneath. Unless an opening is made by a wind break, or a glade cut by natives for planting, the jungle is unbroken, and there is no way of locating these pheasants except by the direction of their voices.

The males are given an alert appearance by the upright, stiffened crest arising from the top of the head. While they take such risks to summon their mates and to display before them, the hens later go off by themselves, choose a nesting site, and lay and brood their two white eggs in solitude.

Photogravure 73. DANCING ARENA AND ESCAPE TRAIL OF BORNEAN ARGUS PHEASANT . . . . *Facing page* 140

Photographs by William Beebe.

The male Argus Pheasant chooses a spot usually on a hill-top, clears it of all vegetation, and uses it as a display arena. The first attempts of young birds sometimes result in failure, as when they have the area all cleared except for some stout growth or root which defies all attempts at removal. Such a condition seems invariably to result in desertion for a more satisfactory site. One of the most important features is the escape trail, a low tunnel through the densest side of the glade, through which the bird can flee at once on the approach of danger.

Photogravure 74. DANCING ARENA, AND ARGUS FEATHERS IN HEAD-DRESS OF DYAK DANCER . . . . *Facing page* 142

Photographs by William Beebe.

When the display arena is completed it is roughly circular, and about three yards in diameter. The male takes up its position in the centre and calls until a hen Argus responds and approaches. He then ceases calling, and the courtship display begins.

The native Dyaks trap the Argus Pheasant in large numbers, both for food and to use the feathers for decoration. The large wing-plumes are sewed into feather mantles, head-dresses and war totems. The Dyak name for the Argus is *ruai.*

Photogravure 75. DANCING-GROUND OF A FULL-GROWN ARGUS PHEASANT, AND NATIVE SPRING-TRAP WHICH CAUGHT THE BIRD . . . . . *Facing page* 144

Photographs by William Beebe.

The Dyak hunters have two ways of securing Argus Pheasants: they sometimes drive a sharpened bamboo stake into the centre of the arena, which the bird attempts unceasingly to uproot, and in so doing ultimately cuts its own throat; or a spring-trap is set with the treadle concealed in the escape trail, and sprung by the bird the first time it passes.

Photogravure 76. CEYLON HOME OF THE PEAFOWL . . *Facing page* 166

Photographs by William Beebe.

In the open, grassy country of south Ceylon, with half-filled lagoons here and there, only a few miles within from the ford used by bullock carts, I saw my first wild peacock and found its nest. Early one morning, in the scope of the upper photograph, I saw peafowl, wild pig, spoonbills, pelicans, flamingoes, elephants and axis deer, and heard barking deer and junglefowl. Amid such a natural zoological park these splendid birds made their home.

Photogravure 77. NESTING GROUND AND ENTRANCE TO PEAFOWL'S NEST . . . . *Facing page* 172

Photographs by William Beebe.

A peahen's nest in south Ceylon was guarded by dangerous water buffalo, which fed slowly over the grassy plains, always accompanied by a ring of white herons or cattle egrets.

The nest itself was well hidden in a tangle of underbrush, surrounded by coarse, high grass, over which the peahen leaped when leaving or returning to her nest, the barrier being thus unbroken by any worn track which might reveal the frequent passage of the parent bird.

Photogravure 78. NEST AND EGG OF PEAFOWL IN SOUTHERN CEYLON

Photographs by William Beebe. *Facing page* 174

The nest of a wild peahen is merely a depression worn by the weight of the bird in whatever material lies upon the chosen spot. A few feathers may become loosened from the breast of the sitting bird, and she may break off any twigs or stems which interfere with her freedom of movement, but no outside material is brought or added to the simple home.

As the photograph shows, the first egg of the set had been laid; the full complement would be from four to eight. The eggs are white, but the coarse, pitted surface results in their soon becoming stained and brown in colour.

Photogravure 79. SACRED WILD PEAFOWL IN INDIA . . *Facing page* 178

Photographs by William Beebe.

Unique among birds of this group is the semi-domesticity of free peafowl in many parts of India. They are considered sacred birds, and the priests often feed them near the temples, so that, at times, hundreds may be seen coming at a stated hour for the food which they know will be awaiting them.

Yet they allow no familiarity, and one beautifully plumaged cock near the ruined palace of the King of Oudh was so wary that I had to take the upper photograph in one-thousandth of a second, as the bird dashed at full speed across an open space.

Photogravure 80. INDIAN AND WHITE PEACOCKS WITH TRAINS SPREAD

Photographs by William Beebe. *Facing page* 180

There is no casual arrangement of the ocelli in the train, but, when all the feathers are present and full grown, they show a very regular, mechanical design, a sequence of radiating lines. The so-called "proud" pose of the head and neck is due rather to the necessity for a complete change of balance, in order to support upright on their ends the one hundred to one hundred and fifty great feathers in the train.

There is no doubt that the birds appreciate an audience, and, in a park, will often approach closely a crowd of people and deliberately display before them for a half-hour at a time.

Photogravure 81. THE ACTIVITIES OF PEAFOWL . . . *Facing page* 182

Photographs by William Beebe.

I

Not only is it necessary for the head and neck to be drawn stiffly back when the train is spread, but the true tail is of great importance in acting as a posterior support. The twenty great brown tail-feathers form a solid fan against which the five score or more tall shafts lean securely.

II

Although truly tropical birds, and able to withstand the most extreme heat of the Indian plains, peafowl adapt themselves to severe cold in northern countries. I have often seen these birds go to roost in tall trees late on a winter evening, and next morning be completely hidden from view in wet snow which had drifted over them.

III

In spite of the weight and obvious inconvenience of the great train of feathers, wild peacocks are able to escape quickly by remarkably vertical flight, and to roost at night in the tallest trees. At the breeding season, besides displaying before the hens, the cocks wage fierce battles with one another, leaping and dodging and striking with their spurs at a rate of speed, and with an activity, which seems quite independent of the weight and drag of the following, curving, twisting train.

Photogravure 82. WHERE THE GREEN PEAFOWL DRINK . *Facing page* 192

Photographs by William Beebe.

These splendid birds fly down from their roosts to some favourite spot along the jungle rivers of Malay, usually a sand-bar at a bend where they can have a clear view of possible danger both up and down stream. They must also watch the jungle behind for leopards and great snakes, and the waters in front for crocodiles. When they have drunk they go slowly off to feed, or, if disturbed before they are ready, they fly up into some neighbouring tree until fear and suspicion have passed.

Photogravure 83. WHERE THE GREEN PEAFOWL FIND FOOD AND REST

Photographs by William Beebe. *Facing page* 194

I

After a leisurely morning drink, the birds feed; not in deep jungle where the sudden rush of an enemy would find them helpless, but in an open glade with an abundance of white ant nests, or else along the more exposed banks of the river itself.

II

As the heat of the day increases, the birds often work their way to the heart of a rotan thorn tangle, and here doze and idly preen their plumage and wait for the coolness of afternoon. No creature in the world can move quickly or quietly in such a maze of thorns and cruel briers, and the birds are safe from all molestation.

Photogravure 84. FOOD OF THE GREEN PEAFOWL . . . *Facing page* 196

Photographs by William Beebe.

In common with many other members of the Pheasant Family, the principal item of diet of Green Peafowl is white ants or termites. These omnipresent insects are scratched out of their turreted homes, or picked up as they march from place to place (as in the lower photograph). Even the large-headed, strong-jawed soldiers are no protection against the devastating beaks of peafowl, although I have shot these birds with ten or fifteen heads of termite soldiers fastened in their mouth and throat, the jaws of the insects being firmly fixed in death in the lateral tissues.

Photogravure 85. JAVAN LOWLANDS FROM A PEAFOWL ROOST . *Facing page* 198

Photograph by William Beebe.

In the lowlands of this island peafowl inhabit narrow valleys between limestone ridges, grassy in character, with thorny acacias and occasional cotton trees on which they roost. Here they feed principally on small red berries.

Photogravure 86. MOUNTAIN HAUNTS OF THE GREEN PEAFOWL IN JAVA . . . . *Facing page* 200

Photograph by William Beebe.

The most picturesque place inhabited by these birds is the mountains of central Java. Never will I forget an early morning when, from the tent door, I looked out across a magnificent gorge to a high, misty waterfall beyond. Small birds of many species had flown from their roosts in small side gorges down to the stream for their early morning drink. At last came the wholly unexpected sight of three Green Peafowl, two with long trains, shooting like meteors across the rainbowed depths. They appeared, glowed like opals in the low-slanted rays, and vanished.

Photogravure 87. SILVER PHEASANTS ROOSTING . . . *Facing page* 202

Photograph by William Beebe.

Midnight flashlight of Silver Pheasants roosting in a tree in the Faircourt Aviaries of Colonel Anthony R. Kuser, at Bernardsville, New Jersey.

MAPS

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CHRYSOLOPHUS

GOLDEN PHEASANTS

CHRYSOLOPHUS

GOLDEN PHEASANTS

Order GALLIFORMES

Family PHASIANIDAE

Subfamily PHASIANINAE

Genus *CHRYSOLOPHUS*

The Golden and the Amherst Pheasants form a very natural genus, well isolated and demarcated from the others of this family. Linnaeus placed the species, with which he was acquainted, in the all-inclusive genus *Phasianus*, and although they have since rightly been separated, yet it is probable that in any linear classification, unnatural though it be, the two groups would come rather near together.

These pheasants are small in comparison with the general run of their allies, and the sexes are very unlike in appearance. The two known species are closely related, and offer an excellent illustration of differentiation of pattern and colour, while structurally they are almost identical. This is not by any means invariably the case with other birds, and in many instances the apparently evanescent phenomenon of pigmentation outlasts and outvalues changes in actual structure and dimensions of feathers and other tissues. The presence or absence of feathering on the face is almost the only structural difference between these species.

The males have elongated stiffened crests, and a very remarkable cape, specialized both as to musculature, structure and pigment. The tail-feathers are long and slightly arched, and the entire plumage shows a very high degree of specialization of colour. As is so often true, it is impossible to indicate which is the more ancestral type. That vanished form probably lay midway, the two descendants each developing specialization in different parts of the plumage. For instance, while the pure white of the Amherst's cape is far more of an extreme specialization than the orange of the Golden, yet the barbless extremities of the feathers of the latter are specializations of an extremely high order.

KEY TO *CHRYSOLOPHUS*

I A large cape of feathers (males).	
a Feather cape orange and black	*pictus.*
b Feather cape white and black	*amherstiae.*
II No cape present (females).	
a Facial skin completely feathered	*pictus.*
b Facial skin partly bare	*amherstiae.*

The balance of generalization is very slightly in favour of the Golden, considering the feathered face, the more monochrome tail-feathers and the dull-coloured wings.

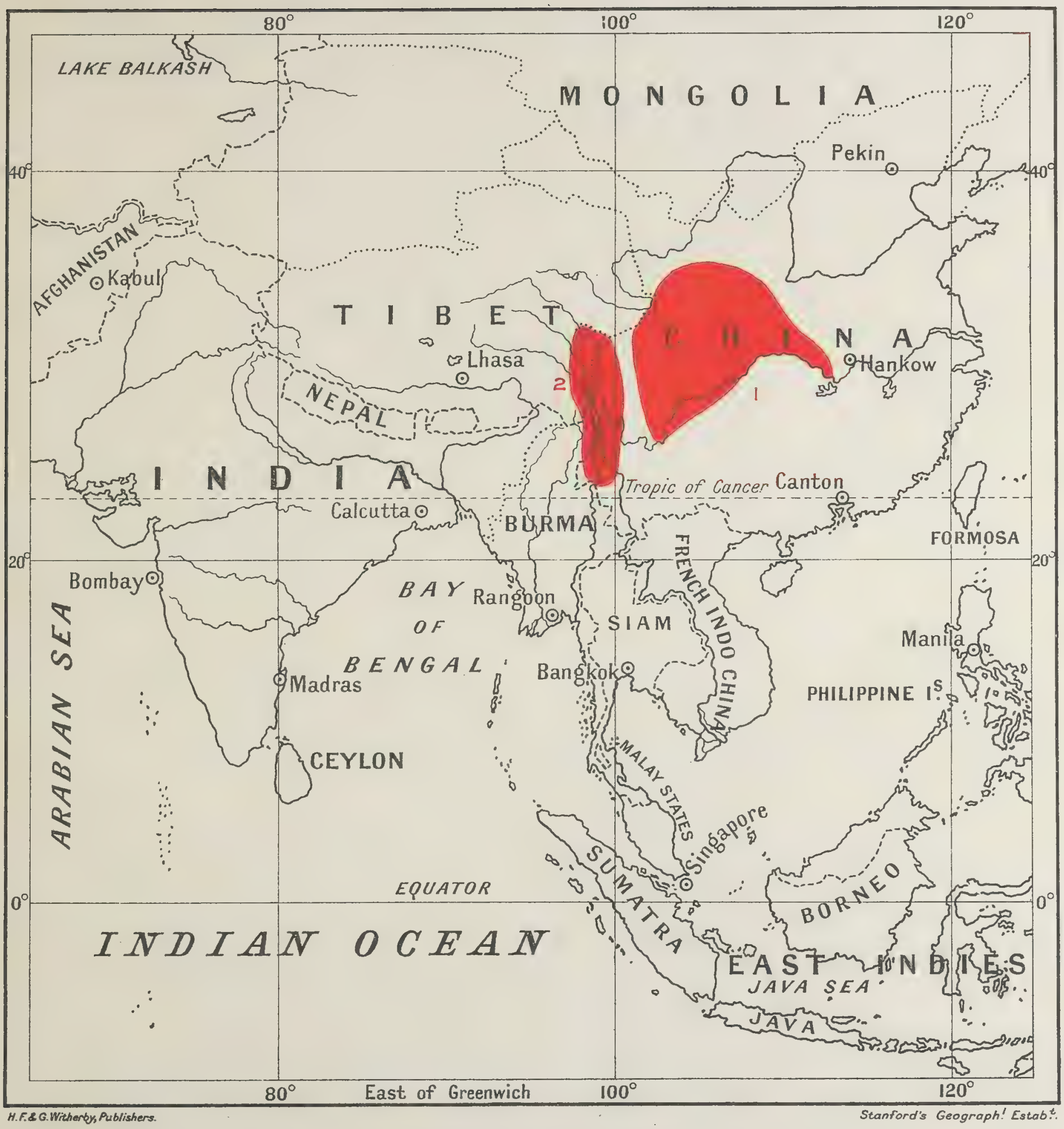
The mandibles are fairly strong; the legs are long and slender, and the feet delicately proportioned to the slender body. The spurs are sharp, but short and slow to develop.

The females are of generalized buffs and browns, showing no traces of the male's secondary sexual characters, and distinguished from each other chiefly by the greater or less density of feathering on the face.

The genus *Chrysolophus* consists of but two species, inhabiting the mountains of central and western China:

Golden Pheasant	*Chrysolophus pictus* (Linnaeus).
Lady Amherst Pheasant	*Chrysolophus amherstiae* (Leadbeater).

MAP XV.


80°
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Kabul
TIBET
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Hankow
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Tropic of Cancer
Canton
Calcutta
BURMA
FORMOSA
20°
Bombay
BAY OF BENGAL
Rangoon
SIAM
FRENCH INDO CHINA
Manila
Madras
Bangkok
PHILIPPINE Is.
ARABIAN SEA
CEYLON
MALAY STATES
Singapore
SUMATRA
BORNEO
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EAST INDIES
JAVA SEA
JAVA
East of Greenwich

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MAP SHOWING THE DISTRIBUTION OF THE GOLDEN PHEASANTS.

Region 1. Chrysolophus pictus
Region 2. Chrysolophus amherstiae

GOLDEN PHEASANT

Chrysolophus pictus (Linnaeus)

NAMES.—Generic: *Chrysolophus*, Gr. χρυσόλοφος, with golden crest, from χρυσός, gold, + λόφος, crest. Specific: *pictus*, Latin, painted or adorned. English: Golden or Painted Pheasant. French: Faisan doré ou tricolor de la Chine. German: Goldfasan. Native: Kin-ky or Ching Chi (Fowl of Gold, Chinese).

BRIEF DESCRIPTION.—Male: Top of the head and long, hairy crest, lower back and rump golden yellow; truncated cape-feathers orange, tipped and barred with steel blue. Mantle metallic green tipped with black. Scapulars dark crimson; wing-coverts brown mottled with black; inner secondaries dark purple. Chin, throat and sides of face pale rusty brown. Entire under parts and tips of the upper tail-coverts shining crimson. Central tail-feathers black, thickly and coarsely dotted with pale brown, the remaining tail-feathers mostly obliquely barred with the same colour. Female: Top of head, mantle and wings black barred with buff and rufous; lower back and rump buff finely mottled with black. Chin and throat buffy white; sides of face and under parts buff, barred except on the mid-belly, with dark brown. Tail barred and somewhat mottled with buff and black.

RANGE.—Mountains of Central China.

GENERAL DISTRIBUTION

WE have but a vague idea of the exact limits of the range of the Golden Pheasant. The mountains of Central China indicate it in general, and more specifically we have records of its occurrence in a wild state in western Hupeh, eastern and northern Szechuan, southern Shensi and Kansu, and south-eastern Kokonor.

GENERAL ACCOUNT

Probably no other bird in the world is so well known in captivity and so easy to breed, and yet at the same time with haunts, habits and general life in a wild state so absolutely unknown as the Golden Pheasant. For centuries the Chinese have kept in captivity and depicted this brilliant species, long before it was seen by any Caucasian ornithologist, and while for the last hundred and seventy years we find numerous allusions to the bird in literature, these are wholly barren of interest, except as they refer to its life in confinement.

The reason for this ignorance seems to be twofold. First, the supply of wild caught captive birds and of skins available in China is so ample and constant that there has been no incentive to send collectors to the haunts of the birds after specimens. And again, the Golden Pheasant is a poor game-bird, preferring to run rather than fly, and hence is ignored by the sportsmen who have penetrated to its wild home.

In Hupeh I found this bird fairly common, and it seems to be generally distributed in the western part of the province.

Wherever a steep ridge, rocky and barren save for a dense growth of scrub bamboo, made it impossible for the Chinese to utilize even a foot of the ground for their crops, here there was excellent chance of finding Golden Pheasants. The tops of these ranges were often very precipitous, and the rocks predominated, while small tufts of coarse grass sprouted in the crannies, with here and there a low-growing clump of some red or yellow flowering plant. Part way down the slope there usually occurred a fault—making a level terrace a few feet in width, and below this the slope was less steep, and permitted the bamboo to secure a firm foothold. These terraces I found to be the best places for erecting my umbrella tent, and in such locations I had good opportunities of watching these brilliant pheasants.

In early morning they would begin their calling, usually some distance down in the valley. Through the blue mist would come the harsh, metallic, double screech, *chă-chac!* or *chăp-chŏk!* an utterance almost impossible to indicate in words. A bird calling two hundred yards away would be answered by another near by, and then from the opposite slope would come a faint *chă-chă!* softened and mellowed by distance as is even the voice of raven or peacock. The pheasants did not appear to descend to the bottom streams to drink in the morning, and indeed there seemed little need at this season, as every leaf and blade of vegetation was a-drip with dew. The calling at first was most vigorous and continuous, but the birds remained stationary for some time, from the first really clear dawn, when the crowing began, until the valley mists had well cleared away. They called from the immediate vicinity of their roosting places, and these seemed to be quite definite, as on several consecutive mornings four distinct calling birds were in relatively the same positions. I did not trust to memory for this, but mounted four little twig pointers in my tent, indicating the direction from which came the voice of each.

I could get no reliable information as to seasonal migrations of Golden Pheasants, but from the nature of their haunts there can be relatively little shifting with the seasons. The deepest valleys offer but slight change from the sides of the mountains, and the birds, at least in early spring, ranged over every altitude in the vicinity of the places where I studied them.

In spite of the fact that the Golden Pheasant is everywhere trapped by the Chinese, it seems to be holding its own, and unless there is added some new monetary incentive in the way of bounty upon its beautiful plumage, the species will apparently be found in a wild state for many years to come. The extreme protective nature of the plumage of the female and the careful way in which the nest is hidden, are additional safeguards. The Chinese farmer frequently catches the young of many species of pheasants, but I have never heard of any Golden chicks being thus obtained. Their very small size and extremely wary nature are important aids to their preservation.

In the early spring I saw a number of solitary males, while a greater number were accompanied by a single hen. I once thought I had discovered a Golden harem of three hens with a single cock, but my glasses showed that two of the birds were immature males, showing a few adventitious adult feathers. Before they drifted out of sight up the hillside the young birds had detached themselves from the society of the older ones and taken a new route.

In captivity, four or five hens are frequently allotted to a single cock, but in my experience the chicks have been stronger when the birds are paired. This is all the evidence I have in regard to monogamy.

Golden Pheasants are pre-eminently terrestrial, even to a greater degree than most other pheasants. It is with the utmost difficulty that they are forced to take wing, choosing invariably to scurry away. When surprised on a bit of open ground they will sometimes partly open their wings and thus aid their running by a sort of half glide. Once only I saw a cock leap up and fly over a low ridge of rock some ten feet high, flapping rapidly, the wings appearing remarkably rounded and concave. When the highest point was reached, the usual pheasant scaling was resorted to, carrying the bird many yards down among the bamboo scrub. The sun was shining and the golden, orange and scarlet of the flying bird shone with the greatest intensity. The flight, judging from captive birds, is weak and irregular, and when we realize what a conspicuous object such a volplaning bird is when silhouetted against the green vegetation or even brown rocks, the danger of even a brief flight is apparent.

The gait of this pheasant is of the most dignified description, the steps long and high, and the whole mien dainty and high-bred. Every movement indicates caste, as its wonderful ornaments, patterns and colours designate it as one of the most highly specialized of all its family. The harsh double crow is characteristic of the breeding season and, as Chinese farmers assured me, is seldom heard at other seasons than the spring. Except for low clucking calls between the sexes or between birds of the year I heard no other notes. The birds are not apparently gregarious even in the winter, and appear to live in pairs, or possibly sometimes in trios, throughout the year.

Nothing has been recorded of the food of this bird. I found the birds in three different localities feeding chiefly on the leaves and buds of a small shrub, on the newly sprouting leaves and buds of dwarf bamboo, and on the flowers of an azalea-like plant respectively. The two latter had also remains of spiders and insects, especially small coleoptera.

I ran down two roosts of Golden Pheasants, both being in pine trees not over twelve feet above the ground, and on horizontal branches half-way between the trunk and the extremity. In one tree two birds roosted on opposite sides, and in the other case at least a pair were roosting side by side. The sign showed that the latter had been occupied for many weeks. I could also be certain that the birds faced sometimes in one direction, sometimes in the other, adapting themselves perhaps to the direction of the wind.

The eyes, and secondly the ears, are the faculties upon which these birds rely for detecting the approach of danger. Several times I have had a pair of birds in the field of view of my binoculars, far across a valley and yet in full sight, when I had my assistant slowly rise to his feet and walk along the ridge. The effect on the birds was most interesting. His very first movement was, of course, detected. When they were close to bamboo scrub they plunged headlong into it and vanished. If we gave no more signs of life, in five or ten minutes they would emerge from the opposite side, but would watch us closely for a long time as they fed slowly along the hillside.

When the pheasants were some distance from cover, among rocks, the cock followed the same tactics, zigzagging swiftly back and forth among the stones and boulders, until the green vegetation eclipsed his brilliance. In this case, however, the hen squatted instantly and remained so as long as there seemed any suspicion of danger. I never saw a hen run more than about five yards to cover. When farther in the open she would invariably choose to squat, and indeed had I not already had her marked down I should never otherwise have been able to find her, so perfectly did she blend with the weathered rocks. This was one more of the many instances I have observed of the advisability of leaving the question of protective or non-protective colouring to the birds themselves. Of many cocks seen under many varying conditions of light and shadow, rock and vegetation, I have never seen one which did not catch the eye at once, even when the bird was motionless, and again, I have seldom or never detected a hen until she revealed her presence by some movement.

I saw no hint of association with other birds, nor did I observe any attack by predatory mammals or birds. Twice, however, I came across the remains of tragedies in the form of scattered wing and body feathers, the work of owls or eagles.

A third finding of feathers was of great interest. These were only body feathers of cock birds and were scattered over a considerable area. The point of especial interest was the varying condition of these. Some were bedraggled, faded and trampled into the dirt, others were comparatively fresh. There seemed little doubt that there had been many battles fought here between rival males. In captivity, even where the birds are given an abundance of room, there is no favourite tilting field. The birds fight when and wherever they chance to meet. Although I watched long and continuously for more direct evidence of the meaning of this place, none was forthcoming. Once a female walked quickly across it, but no males ever came near it while I remained in the vicinity.

The crowing of the males was vigorous and continuous in the early mornings, as I have said, and the way the call of one bird was instantly answered indicated the willingness to give and accept challenges. The pugnacity of the Golden Pheasant in captivity is notorious, and this is apparently no whit diminished in a wild state. The segregation of the hens, however, and the absence of a confining paddock fence diminish the mortality in the latter case. A number of cocks may be safely confined by themselves if wholly out of sight of any female, but so short-tempered are they that even the presence of a young male in female garb will often precipitate hostilities, which it must be admitted are rather abortive and futile. If a single female be admitted, however, the tragedy of the Kilkenny cats is likely to be re-enacted, and often the company of males will fight until a single, much-wounded cock remains, too sick of life and weak to take any interest in the feathered Helen who was the cause of all this fearful contest.

The breeding season begins about April in central China, although the courtship and challenging of the males is instituted at the first hint of spring, their fine emotional frenzy being an excellent thermometer, decreasing on chilly days, and conversely gaining in vigour and intensity in the warm sunshine of early spring.

Only once did I observe a wild cock in the act of showing off before a hen. This was when the pair of birds had not passed beneath my tent, as I had hoped, but circled higher up and worked along the ridge between me and the crest. The day was chilly and cloudy, the low, mist-like clouds driving before a wind which was unfelt in my sheltered position, but which I could hear soughing through the stunted pines far above me. The pheasants found some source of food supply in a small niche on the hillside and remained there in full view for many minutes picking at the bamboo stems and among the scattered fallen leaves. Suddenly a rift in the clouds let through a flood of warm sunlight. The dull green twilight in my tent glowed and I instantly

HOME OF THE GOLDEN PHEASANT

The steep, tumbled mountains of Szechuan, Shensi and Kansu, where the scrub bamboo offers an abundance of protection, and even the wild western Chinese tribes are seldom seen, the Golden Pheasant is at home. Streams rush through the bottoms of the twisting valleys, winds howl around the topmost peaks of these lonely mountains, and between, on the slopes and outjutting terraces, these dainty birds live and carry on their wonderful courtship; and here, upon their precious eggs, the hens sit close among the dead leaves and grass.

HOME OF THE GOLDEN PHEASANT

felt the warmth even through the thick denim. The cock fed quietly for a moment and then ran over to the hen and, circling around in front, presented his full broadside of glowing hues. I could even see his beak open before his cape shut it from view, although he was too far away for the accompanying hiss to reach me. The clouds closed down again and the warmth went out of the air like the heat from a snuffed candle, but once more the cock pheasant turned and shot forth his ruff and displayed his opposite battery of allurements. He then shook himself and went on feeding. The hen had never for a moment ceased her prosaic search for food. This sudden and unseasonal display of her mate awoke no apparent response in her breast. The quick reaction to even a few minutes of warm sunlight was most interesting.

Fortunately the display of the Golden Pheasant is something we can study at leisure in our captive birds. There are few more beautiful sights than a pen of these gorgeous pheasants dashing about, often leaping in their eagerness over one another's heads and posturing in their statuesque manner before the hens. So thoroughly do they seem to enjoy it all that one cannot fail to think how deep a disappointment it would be to them were the hens to capitulate at once. But there is never any danger of this, and for many days the sombre little mates are adamant, with apparently never a glance at the terrific endeavours of the cocks to attract their attention.

One would like to think of the hens as playing off one cock against another in conscious mental comparison; of appraising this ruff with that patch of gold; this crest of pure spun yellow glass with those stiffened plumes of crimson. To our eyes such comparison is reasonable; the beauty of colour, of agility, of grace of the cock pheasants—all these appeal powerfully to our æsthetic sense. But long-continued observation forbids such an interpretation. That the colours and the wonderful pin-wheeling of the orange-and-black ruff about the glowing eye, the infinite patience striving continually to bring all the colours and patterns of the body, of both sides at once, constantly to the attention of the female—that all these are of paramount importance in the courtship, we cannot doubt for a moment, but that their effect is similar to the effect upon our minds is another matter.

Stand close to a dozen Golden Pheasants thus courting, with the hot sun beating down, and idly watch them for many minutes. The circling, dizzy movements and play of blazing colours will soon have its effect, and one presently ceases to watch definite birds, or definite actions, the whole scene resolving itself into a soothing kaleidoscopic display, one's eyes and mind being content to register only the general polychrome effect. One finds oneself day-dreaming, the eyes focusing on no particular object. It seems to me that the most reasonable explanation of the wonderful performance is of a mental effect upon the hens, not æsthetic, not directly critical or attentional, but a slow indirect influence upon the nerves, the arousing of a soothing, pleasing emotion which stimulates the wonderful sequence of instincts which will result in nest-making, egg-laying, the weeks of patient brooding and the subsequent care of the young through day and night, in fair weather and in storm.

This explanation implies no deprecation of the importance of sexual selection. It is that particular male which, either by vanquishing his rivals or by strength and persistency, most frequently and effectively displays, which will win the hen, regardless of whether the actual process be by æsthetic appreciation or by some subconscious, hypnotic-like influence. Yet, when we remember how impossible of definite explanation the term æsthetic appreciation is in ourselves—how no two people in the world have the same appreciation of art, music or nature, and how widely apart are the ideals of beauty of the various races of mankind, we may perhaps say that my explanation has rather worked around in a circle, and that it is, after all, a very primitive form of æsthetic feeling.

The human explanation, however, like the man-given name, is a matter of secondary importance. The phenomenon remains ever as wonderful, and the courtship of the Golden Pheasant in spring is something I try never to miss seeing.

Before I begin to describe it in detail, and leaving any attempt at explanation, I wish to speak of the orange and black ruff of the Golden as an example of one of many most marvellous examples of specialized ornaments, whose mode of origin and subsequent evolution is at present wholly inexplicable to us. In the case of the great patch of golden plumage on the back and rump, or the coloured wattles of some of the other pheasants, we can satisfy our inquiries as to evolution by realizing the gradual increase in extent and in brilliance either by small variations or more abruptly by mutational steps.

The ruff, however, appearing only at the end of the second year, is still imperfect even when full-grown. Throughout the following second winter it lies thrown back over the neck and shoulders, each feather wonderfully specialized as to form and structure as well as hue, a cape of great beauty of colour, but of irregular, broken pattern. Had we seen only dead specimens of Golden Pheasants we should never suspect this patch of feathers of aught but an ornament comparable to the posterior zone of green.

But the first glance at a courting male reveals the real *raison d'être* of the ruff. From a crowded neck-covering of irregularly lined feathers it is transformed into a wonderful semicircular halo of concentric rings of orange and black, drawn forward and around the focus of the glowing golden eye. The details of the display are as remarkable as the sudden transformation in the courting bird. Besides the black tip to each feather, there is a second narrow bar of black some distance up the web and wholly concealed from view while the cape is at rest in its usual closed position. When fully spread the breaks which would occur in the terminal black line from the extension of the separate feathers are closed up, and the pattern made symmetrical by the second black line, which now becomes visible.

First to one side, then the other, is displayed this magnificent ornament, obscuring the entire head and beak, and leaving visible only the flowing crest of spun gold and the brilliant eye. In this momentary display we see the ultimate object of the ruff. For the sole purpose of being drawn out into its full extended beauty and symmetry, perhaps forty or fifty times during a few days, for one or two seconds at each display, it has been carried folded up throughout the whole of the remaining year, ensheathed in apparent imperfection. Such a phenomenon baffles all our theories, makes naught of our most concentrated researches. And yet before the world-wide increase of mankind puts an end to the race of Golden Pheasants we may have solved this and the myriads of other problems whose mystery only adds to their fascination.

The courtship display of the Golden Pheasant is altogether lateral. The hen is usually feeding quietly when the cock sidles or more often runs up, circling until he gets in front, when with a sudden rush he at once assumes the position of full display with his eye as close to her head as possible. The broadside he offers causes his body to become flattened and distorted and as symmetrical as he can make it. The wing toward her is lowered, the opposite one raised, only slightly, however, and but little of the irregularly mottled primaries is visible, while the purple secondaries are widely spread. The chief function of the wing movement is to leave bare and flattened the expanse of golden back and rump, the wing of the farther side aiding materially in pushing up the gold and scarlet feathers of that side. The tail is slanted rather than spread, the scarlet tail-coverts becoming very conspicuous. The breast is puffed out, but even so the scarlet enters but slightly into the exhibition. It is the display of the dorsal colours and patterns which is the effort of the bird. The green mantle is spread and flattened, but the manipulation of the cape is the grand feature. This I have already described, the entire cape being drawn over to the display side.

Simultaneously with the completion of this movement, the bird utters a sharp hiss, much like the hiss of a snake, through the wide-opened beak, the beak being wholly concealed at the time behind the anterior arm of the semicircular ruff. If the hen stops feeding and remains quiet, the cock holds his position without a tremor until she moves Usually, especially early in the courtship season, she either runs a few steps or turns away. Instantly the cock relaxes, the plumage returns to its normal position and he turns and makes a second optical onslaught, this time perhaps with the opposite side. His object is always to get directly in the line of vision of the hen. I have seen a hen turn her head slightly, and the cock, instead of relaxing, would stretch to his utmost limit, twisting and bending his body so as to keep in her sight. There is thus no moment of blindness at the height of ecstasy, as in many of the grouse. His pupil contracts at the supreme moment, until it becomes a mere pin-point of black, but he is fully alive to every movement of the hen.

More aggravating to our eyes is the behaviour of an old hen early in the season, when two or three males are curveting and posing about her. She absolutely ignores their existence, not even turning away, but looking through and beyond them, paying not the slightest attention, going on picking up food or scratching as if she were wholly alone.

As the excitement increases the males become more and more active, and before long two will make a dash at the same instant and cross each other's path. Then all display is cast aside, ruffs are ensheathed and with lowered beaks they face one another, beginning a series of lightning-like strokes with spurs and beak which, if persisted in, sooner or later lays low one of the combatants. In many cases the spurs are so poorly developed that the beak alone is brought into action. The final pecking to death is very unlovely, and shows what our admiration for the beauty of the display tempts us to forget, that the whole affair is one of life and death, not only for the contestants, but for the race of Golden Pheasants itself. Next to the preservation of self by the daily search for food and avoidance of danger, this is the one important thing in the whole life of these splendid birds.

There is no record of the nest or eggs of a wild Golden Pheasant. An intelligent Chinaman told me he had found one on the ground with eight eggs. In captivity when the hens are allowed considerable freedom and make their own nests they lay from six to twelve eggs before beginning to sit. The excessive number laid by birds which are more closely confined, where the eggs are taken away as soon as laid, is, of course, no true index to the normal clutch. Females of the first year seldom lay more than twelve or fourteen, but older hens will produce thirty to as many as forty-five fertile eggs in a season. The eggs are smooth, quite glossy and a broad oval in shape. They vary from a pale buff to cream colour, and measure from 32 to 35 mm. in breadth, and from 43 to 46 in length.

So tiny and helpless seem the young chicks when first hatched, that one wonders how any can survive the dangers from beast, bird and weather which menace them in their rugged Chinese haunts.

The relation between the wild birds and the human inhabitants of the country is very casual. There is a demand for the plumage for millinery purposes and for the feathers of the crest for tying artificial flies for fishing. But the output of aviary-bred birds in Europe is so considerable that comparatively few hundreds of these pheasants are exported annually from China. They are offered for sale in fair numbers at Hankow in the fall, miserably confined in small quakes or wicker baskets, where they bring about 400 cash or fifty cents a pair. One man who attempted to keep twenty or thirty birds in that city, lost them all in a short time from the attacks of stoats and rats, which overran the place. All the wild birds caught by the Chinese are captured in snares, which very frequently break or strain the long, slender legs. So wary are the birds, that only the Chinese hunters or those who spend much time in the wilder portions of the country ever see them.

It has been thought that Pliny's account of the Phoenix (" History," Liv. 10, Caput 2, p. 5) may have been based on the Golden Pheasant, but I do not think this can ever be answered with certainty. After careful study of the subject in literature, and examination of hundreds of representations of this creature, both in the museums of three continents and throughout China and Japan, I see in it only a creature of the imagination, usually with pheasant or peacock characters, but on the whole altogether mythical and born of the human mind.

CAPTIVITY

I have already given considerable notes in regard to the habits of this bird in captivity, but as the Golden is one of the easiest of the pheasants to obtain and to breed, I shall go more into detail. The average market price for a pair of these birds is about twelve dollars, and they can be kept in health and bred successfully in a surprisingly small aviary. As is the case with almost all birds, individuality is strongly pronounced, and it is impossible to tell how any given bird will behave. As a rule, however, they will soon become tame, especially in small quarters, and will not fight or annoy birds smaller than themselves. They have often been kept for years in close association with tiny manakins and weavers with no harmful results, except for the dangers arising from the clumsiness and large size of the pheasants. On the other hand, young Golden chicks have been known to seize by the neck, shake and kill a brood of still tinier California quail chicks, and a cock Golden will occasionally run amok and kill his own mate.

These pheasants do not come into full colour until the second year, and will not breed the first spring. The young cocks should be confined by themselves, as they will ill-treat the hens if left in the same run. There are one or two records of the breeding of a young cock, but these cases are unusual and not normal. The hens will lay fertile eggs during the first spring, but, as I have said, only about a third of the number which they will deposit the following year.

The hens begin to lay in April, and the eggs should be removed as soon after they are laid as possible. It is not uncommon for the cocks to develop an egg-eating habit, and when this is once fixed it is very difficult to save even a few of the eggs. The hens, when in a rather confined paddock, seldom make a nest, but drop their eggs about the runway, and the cock's quick eyes soon discover the last lain egg and a single peck of the beak destroys all hope of a future chick. If a few artificial eggs are scattered about, he will soon become discouraged and will let the real eggs alone.

The eggs should be placed under bantams, silkies preferably, as larger hens are almost certain to crush a number of the thin, delicate shells. The time of incubation is from twenty-three to twenty-four days. In freedom the former is probably the normal time, but when eggs are kept a week or two before sitting, the chick will invariably be delayed a few hours in hatching.

Tiny and wary as the chicks are, they soon learn to care for themselves. It is a fact that for the first few days they seem confused and do not answer readily to the call of the hen. If not kept in a small run attached to the coop, they are liable to stray at this time or perhaps starve. The language of their foster-parent is apparently strange to them, and until they learn to answer her food cluck, the little chaps have a hard time of it.

When a month old they begin to be independent, and if allowed sufficient freedom will leave the bantam and perch in low shrubs at night, changing from there to still higher perches as their power of flight increases. It has been remarked that they roost at the extremities of the branches, thus avoiding the danger of being caught close to the trunk by tree-climbing enemies.

A family of six Goldens which was reared in Ireland "remained in the garden, where they were regularly fed, except at the commencement of winter, when they ceased roosting in the apple-trees, took to a belt of Scotch firs which bounded the garden on one side, and roosted in them all the winter and following spring. I have seen them sitting in the trees when the branches were laden with snow, but they did not seem to suffer in the slightest degree from the severity of winter. About the month of February they first began to wander from the garden for short distances, and as the spring advanced finally disappeared, and I never could hear of their being met with afterwards."

I have known five Golden cocks confined with silvers and other pheasants to select evergreens invariably for roosting from four or five species of trees available for the purpose. The choosing of the evergreens is rather interesting when we remember that pines are their roosting-places in China.

Twenty-four hours after the chicks are hatched they should be placed with the hen in a small coop with vertical slats in front. This may open on a small, fine-mesh wired runway about three by six feet by eighteen inches high, and open at the bottom, placed on the grass. Thus the chicks can have sufficient exercise and sun without being exposed to the direct attacks of cat, rats and other vermin. This will also keep them near the hen and the food-dish, thus facilitating their learning her call-notes, both for food and danger.

The food may be varied. Insect food is very desirable, and if ants' eggs or fresh maggots are obtainable the chicks will thrive and grow with great rapidity. In addition, chopped green food, such as young lettuce leaves, should be provided, and milk and egg custard, while potatoes, corn meal mush, chopped cheese, and bruised hemp and canary seed are all suitable and will be eaten and digested. When the birds get older they may be weaned to the adult pheasant grain food, such as hemp, wheat and barley.

It is much better to confine the pheasants in a covered aviary, but if this is not possible the wings of the birds should be pinioned, and it is much better to do this when they are quite young, not over a month old. The main blood-vessels should be tied with thread above the first joint—the wrist—and the lower part of the wing (above the first joint, however) taken off with a single snip of the scissors. There will be no loss of blood, and whatever discomfort is felt at first soon passes away, and there is no need ever afterwards to catch the bird and clip its wing-feathers.

Until they become used to flapping upward to their roosting-place with what remains of their flight feathers, it is better to provide a rough ladder leading to the lower limbs of the trees. I have already spoken of the impossibility of keeping more than a single cock confined, at least during the breeding season, with hens. From one to five hens may be placed with a cock, but the fewer the number of the former the better. As with all birds, readjustments may be necessary, for not infrequently a cock Golden will take an inexplicable dislike to one or more of the hens. The hen should be removed at once and replaced by another, for such unfriendliness is never made up, but always results eventually in the death of the female bird.

As to suggestions about protecting the birds from cats and other enemies, this can best be left to the specific case under consideration. In some places the birds are safe in an open aviary with a twelve-foot wire fence, made cat-proof by an outwardly bent entanglement of barbed wire at the top. Elsewhere the entire aviary must be closed in, and in such a case it will be found much better to provide a thick cloth to hang down over the open, wired side, to prevent the birds taking fright at passing cats and dashing themselves against the roof.

An interesting fact in regard to these pheasants is given in the following paragraph written in England. "Golden Pheasants will endure every severity of our climate. Some years since I gave away some eggs, from which birds were hatched and turned loose in a large plantation; they bred freely the ensuing year, and well stocked the preserve; the year following some withdrew to a covert at some considerable distance, driving away the common pheasants and taking possession of the whole. Some Golden Pheasants' eggs, which I forwarded as a present to a friend whose preserves are among the largest in the kingdom, were hatched very early last season and turned loose; these bore all the rigours of winter as well as any others, but in the spring began to show a decided aversion to their fellows of more sombre hue." The fact that the much heavier and larger common pheasants were actually driven away, shows the pugnacity of the Goldens, their activity being probably their biggest asset in encounters of this kind. The two species will occasionally cross, however, the hybrids being very large and of unusual colouring.

Golden Pheasants are fairly good livers, but will do much better in good-sized private aviaries than in the cramped grassless quarters in which they are usually exhibited in zoological gardens. Of seventy-five birds which have lived in the London Zoological Gardens, the average length of life is nearly two years, while the maximum is seven years and nine months.

DETAILED DESCRIPTION

Adult Male.—Entire top of the head, extending backward as a long, silky, filamentous crest; shining golden yellow. The longest feathers may measure as much as 100 mm. and are often slightly tipped with orange. The extreme basal part of these crest feathers is fairly normal, although but scantily barbuled. The visible portion changes abruptly from dull whitish to metallic yellow, the barbs become stiffened and wholly destitute of barbules. The shaft extends as a well-developed rhachis to the very tip, an unusual condition in such a specialized type of feather.

The yellow occiput feathers give place abruptly to the cape which forms one of the most specialized secondary sexual characters to be found among pheasants. The concealed portion of these feathers is whitish at the base, shading into pale buffy orange, the webs being normal. Across the distal end of this zone extends a black band, slightly tinged with metallic blue. The feather is tipped with a second similar bluish-black band, and between these two the barbs are bare and of a clear orange colour. The terminal band being composed chiefly of dark barbules, these appear as a distal tuft on the ends of the bare barbs. The metallic steel blue is very strongly developed in this bar. All the barbs of the feather are lengthened, so that those of all the vane except at the very base reach the truncate tip and enter into the formation of the two black bars and the zone of bare orange barbs. The rhachis, strongly developed up to the first black bar, at this point divides into several barbs indistinguishable in the orange zone from the others.

I have elsewhere described the function which this gorgeous cape assumes in courtship, and how the second line of black, wholly invisible in the closed cape, is of great importance in the widely spread feathers in closing up all gaps in the terminal bar.

The feathers of the lower neck and mantle are metallic sage green, shading basally into a narrow zone of purplish blue, the remainder of the feather being grey. All the feathers in this area, but especially the more anterior ones, show a sub-terminal zone, scantily barbed and black, wholly lacking the iridescent green colour. This is evidently a degenerate relic of the zone of bare barbs which forms the most specialized character of the nuchal cape. On the more posterior mantle feathers this black area becomes almost terminal, and gives the effect of the green feathers having each a terminal band of black. One finds in this area beautiful fault-bars of successive green and purple, especially in captive birds.

The green mantle gives place at once to the zone of golden yellow on the back, rump and shorter upper tail-coverts. These feathers are grey and disintegrated except for a narrow zone of chestnut mottled with black which passes at once into the nearly barbuleless, elongated, terminal golden barbs. The scapulars are dull crimson, mottled with black and with the tips shading into dull scarlet. The side feathers of the back and rump shade from yellow into crimson scarlet, thus merging into the under parts, which are mostly of this colour. The belly, thighs and the concealed parts of all the remaining ventral plumage are chestnut. The lores and face are buffy, and the chin and throat are brown mottled with paler.

The wing-coverts are chestnut mottled with black, the former predominating on the visible portions. The medium coverts are edged with pale buffy white. The primaries are brownish black, the outer webs bordered on the outermost flight feathers and spotted on the inner ones with pale creamy buff. The secondaries are black, dominately mottled with chestnut on the visible outer webs. The innermost secondaries or tertiaries lining the upper inner margin of the wing are glossy purple.

The medium upper tail-coverts are wholly scarlet, while in the longest coverts this colour is confined to the greatly elongated tips, the basal two-thirds resembling the central tail-feathers. The scarlet areas of these feathers are without barbules, stiff and spine-like.

The long, vaulted tail is composed of eighteen feathers, the two central ones being quite different from the others. These are black, thickly ocellated with rounded pale-brown spots. The terminal zone, 100 mm. in length, is whitish buff. In the remainder of the tail-feathers the spots have fused and run together, forming numerous oblique, clouded, often somewhat irregular bars of pale brown. The tip is chestnut. This chestnut tip increases from the second pair outward, until the outer pairs are wholly brownish chestnut, mottled irregularly with black.

Iris yellow; bill greenish yellow; legs and feet greenish horn. Length, 1050 mm.; culmen from nostril, 15; wing, 195; tail, 770; tarsus, 75; middle toe and claw, 60 mm. Spurs, slow of growth and never attaining any great length, but very sharp.

Adult Female.—Sides of the crown tinged with rusty. Top of the head brown, coarsely barred with pale buff and black. On the mantle the bars become more numerous and the pale buff is confined to the much-mottled terminal bar, the remainder being black and rufous. Lower back, rump and upper tail-coverts olive brown, finely vermiculated with black. Scapulars and wing-coverts much like the top of the head, with wide bars of black alternating with more narrow ones of buff, the terminal buffy bar somewhat broken with mottling. Primaries and secondaries brownish black, irregularly barred with buff on the outer web and rufous on the inner.

Central tail-feathers mottled olive brown with numerous irregular and imperfect cross-bars of black. Wide tips pale buff. Outer tail-feathers dull rufous mottled, or in some individuals indistinctly barred with clouded black and buff.

Face fully feathered, buffy white with faint tips of black. Chin and throat white, washed with buff. Remainder of ventral plumage, including lower throat, breast, sides, flanks, thighs and under tail-coverts, creamy buff, narrowly barred with brownish black except on the belly, which is unmarked.

Iris hazel brown; bill yellowish horn colour; legs and feet dark yellowish horn. Length, 650 mm.; bill from nostril, 14; wing, 175; tail, 375; tarsus, 70; middle toe and claw, 55 mm.

Chick in Down.—No facial markings. Top of head and nape warm golden buff, darkening toward centre in a narrow wedge, paling on face into creamy buff and on chin, throat and under parts into creamy white. Back, wings and tail-down chocolate brown

PLATE LXX

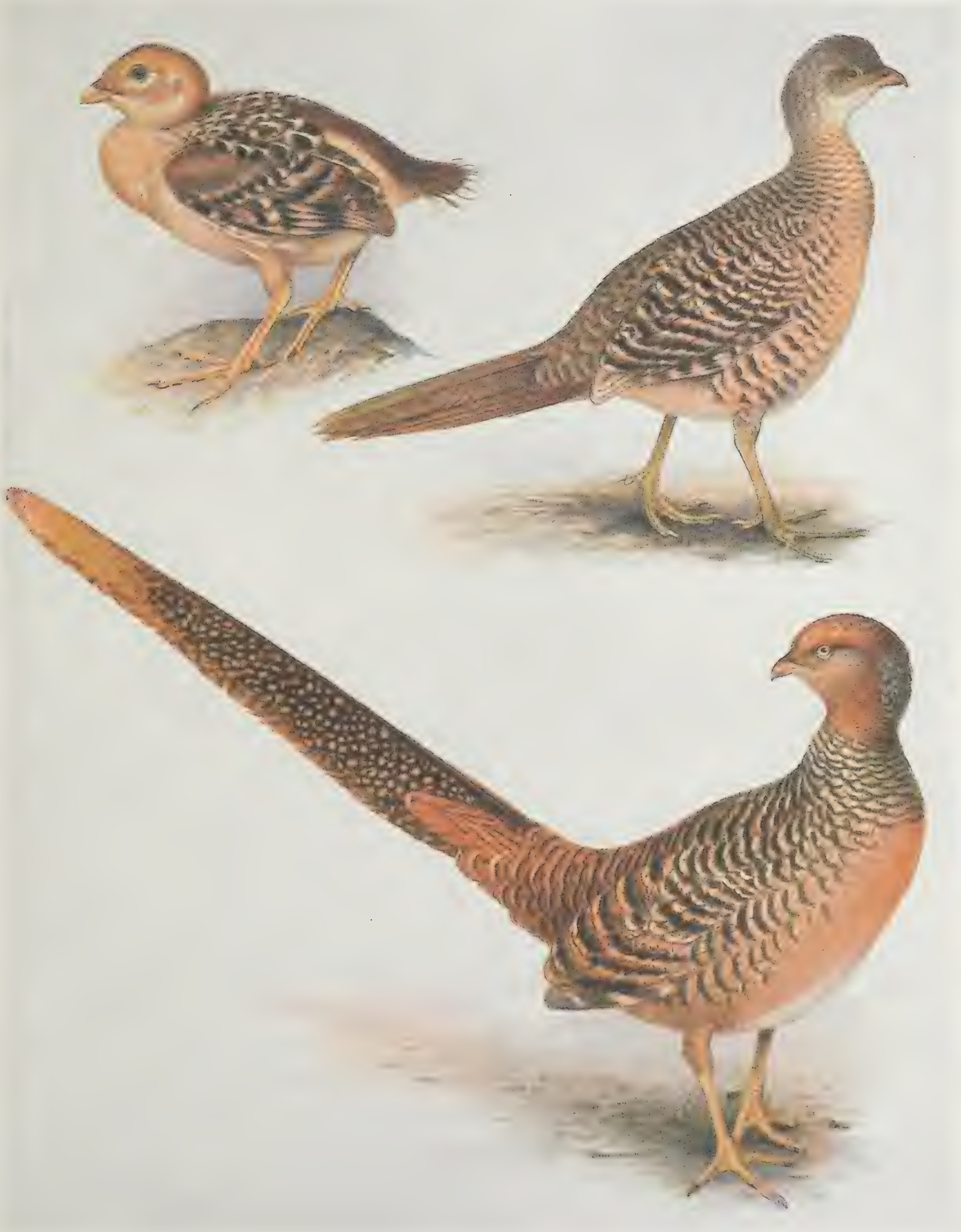
PLUMAGES OF THE GOLDEN PHEASANT

Chrysolophus pictus (Linnaeus)

Fig. 1. Chick in down with sprouting mantle and wing-feathers of the next plumage.

Fig. 2. Male juvenile plumage, closely resembling that of the adult female.

Fig. 3. Male in first-year plumage, showing hint of the ruff and the scarlet pigment. The tail is the last to be moulted, so it is closest in pattern and pigmentation to that of the adult bird.



PLUMAGES OF THE GOLDEN PHEASANT.

with a broad stripe of yellow buff down each side of the body. Iris olive stone colour. Beak yellow, dark at the base of upper mandible. Legs and feet yellow. Bill from nostril, 7 mm.; wing, 40; tarsus, 20; middle toe and claw, 21 mm.

JUVENILE PLUMAGE.—This plumage is, in miniature, much like that of the adult female. The top of the head and nape is quite uniform dark buffy or smoky brown, the side neck with pale buff shaft-streaks and sub-terminal spots. The face is paler buff, and the chin and throat white. On the mantle the dorsal plumage pattern begins abruptly, successive, equally broad, transverse bands of buffy brown and black, rather warm on the mantle and pale buff on the wing-coverts and secondaries. On the lower back, rump and upper tail-coverts the feathers are somewhat disintegrated and the pattern is almost lost. The primaries have the pale buff bands much narrower than the black, and on the secondaries the buff is somewhat clouded with dark mottling. The tail-feathers are long for the size of the bird, tapering gradually, but are not very narrow. They are rufous brown, indistinctly mottled and clouded with dark, and with several very indistinct bands across the terminal half. The ventral feathers are a rich cinnamon buff, with several rather narrow transverse black bands. These are especially strong and numerous on the neck, breast, sides and under tail-coverts, dying out toward the mid-line as disconnected spots, and leaving the mid-belly without markings. There are sixteen tail-feathers in this plumage.

Bill bright golden yellow, darkening toward the base; legs and feet olive yellow. Iris hazel. Length, 330 mm.; bill from nostril, 10; wing, 127; central tail-feather, 122; outer tail-feather, 35; tarsus, 50; middle toe and claw, 45 mm.

FIRST YEAR PLUMAGE.—As in all pheasants which do not acquire their adult plumage at the first annual moult, young Golden Pheasants vary greatly throughout this period. I have taken two cocks at the age of about seven weeks, in full juvenile plumage, and by feeding one excessively and keeping it in a quiet and darkened room, delayed its moult for ten or twelve days. The two birds, when they had assumed the post-juvenile plumage, were entirely unlike, the late moulting bird showing an advance of perhaps ten or fifteen per cent. over the other, in an approximation to the adult coloration and pattern.

In normally moulting birds the head, lower back and tail are the regions which are the last to be renewed, and the result is that we have the general average showing a body plumage of barred buff and black, much like the female or the juvenile, with dull red head, back and rump and a tail quite like that of the adult. If we pluck out the dull red feathers from the crown of a bird in this plumage when they are even only half grown, hardly out of the blood sheaths, they will be replaced by the shining yellow, silky crest of the adult. So rapidly are the syntheses of the pigments consummated.

The red of the head is especially solid and well marked on the sides of the crown, and on the chin and throat. The *anlage* of the ruff is very distinct, the feathers being somewhat larger than those of the surrounding region and unlike them in colour. Very curiously, however, the colour is not what we should expect, but a pale greyish, with a terminal black band and a sub-terminal light one.

The mantle and mid-back show an increase of warm rufous, and the black bands are more broken and irregular. The wing-coverts and flight-feathers remain much the same except that the buff banding is narrower, and on the primaries is usually reduced to spots on the outer web. Even on the secondaries the light bands on the inner webs are broken into mottling and are rufous or chestnut in colour. The tail, in the majority of birds, at this moult assumes much the appearance of the adult, the central pair of rectrices showing buff tips and numerous rounded spots on a black ground, whilst these spots fuse together in irregular clouded oblique bands as we proceed outward. In many specimens the juvenile pigmentation is visible on the terminal half or third of the feathers, this area being irregularly banded with pale rufous, buff and black. The moult of the tail, taking place from the outside in, as in all Phasianinae of my classification, the outer feathers are almost wholly of this earlier more generalized patterning, the more advanced condition dominating more and more of the feathers as we proceed inward, until the central rectrices show not a trace of it. On the lower back, rump, upper and under tail-coverts, the colouring is ahead of the body, being usually a rich rufous or dark red, either uniform or with more or less mottling and broad buff tips, according to whether the bird was slightly advanced or retarded in physical condition at the time of moult. The black barring on the yellow buff under parts is very clear-cut and pronounced, the distribution being the same as in the preceding plumage. The spurs are low, flattened, triangular, but sometimes sharp, not more than 4 mm. in height at the time of this completed moult.

The bill, legs and feet are yellow ochre, and the iris is darker or paler yellow, according to the less or greater advanced condition of the plumage. Length, about 700 mm.; bill from nostril, 15; wing, 185; tail, 400; tarsus, 70; middle toe and claw, 60 mm.

VARIATIONS

I have observed no variations of importance in wild birds, except in the colour of the scapulars, which vary from scarlet, through crimson, to a very dark hue. Even those bred in captivity are usually indistinguishable from Chinese specimens, but occasionally there occur marked alterations of colour, variations which may be considered of three distinct types.

First there is sometimes found a congenital difference in colour in the yellow and orange tints of the cock birds. The most common type of this is where the crest and back are somewhat paler yellow than usual, while the mantle, instead of rich orange, is a uniform straw colour. This is doubtless due to some acute disturbance of the normal nourishment of the pigment supply in the embryo or chick. In all the specimens which I have observed the variation is permanent, the cock moulting each year into the same straw-coloured mantle. It is essentially a degeneration or atavism, as the yellow straw tint is a less specialized colour than the normal orange. It is interesting to note that the other plumage colours, such as the purple wings and the rich ventral scarlet, seem never to be thus affected.

A second type of variation is one which is quite commonly found in many other genera of pheasants, but is especially noticeable among Goldens. This is the more or less gradual assumption of male plumage by hen birds. From the point of view of evolution this has always been a phenomenon of intense interest: that the sombre-hued female, who normally would live out her entire span of life, moulting year after year into the same barred plumage of buff and black, should yet, when affected by certain internal physiological changes, reveal the fact that potentially she possesses the power, by elaborate alchemy of pigment and feather specialization, to come to resemble perfectly from beak to tail her mate, both in hue, pattern and modification of feather. There seems little room for doubt that this physiological change has to do solely with the atrophy of the ovary, or some less apparent disturbance of the sexual organs. All the specimens which I have examined were very evidently barren, either from extreme age, or from some acute or chronic local affection.

An English aviculturist (Johnson, "Avicultural Magazine," N.S. III. 1905, pp. 143–144) gives the following account of a hen Golden Pheasant assuming cock plumage: "Some thirteen years ago three little Golden Pheasant chicks, a few days old, were given me. The mother had deserted them and they were suffering badly from cramp. With the assistance of a tame bantam hen I successfully reared them. They turned out to be one cock and two hens. One of the hens died about two years ago in her ordinary brown attire; the other (which from the first had a slight golden tint on the head) at the next moult was adorned with the beautiful silky golden crest of her mate and a few yellow feathers in her brown neck; when she moulted again the breast and lower part of the back became yellow, and at this last moult the yellow breast was streaked with scarlet, the collar a very deep orange barred with black, the mantle on the shoulders a metallic green, and the wings a beautiful steely blue barred with wavy lines of brown; the crest long, silky, and brighter gold than the cock's, and the same scarlet feathers in the tail as he has. The bird was a great pet and exceedingly tame; she was taken ill on Christmas Day and died the following morning. I am having her preserved as a curiosity. We thought her more beautiful than the cock, her deep orange collar and golden breast being the only distinguishing marks. Had she lived over another moult, I believe the breast would also have become scarlet. I am aware that a very old hen past breeding will sometimes begin to crow and assume the spurs and hackles of the cock, having had instances in my own poultry yard, but have never seen such a perfect example of total change of plumage as this."

The interesting points in the above description are the gradual change moult by moult, and the orthogenic development of colour. We see that the buff and brown of the female plumage change into yellow, this into orange, and finally appears the scarlet—the most specialized colour of the adult male. This unquestionably reproduces the necessary normal path of colour evolution along which the species has progressed. I have been able to observe several individual females in the course of such change, and these after considerable pigment alteration had already taken place. The individual feather change showed the spectrum gradation to be invariably as I have stated it. The nodes of colour, however, were usually somewhat irregular.

In this ontogenetic change of sexual colour the specialized silky crest, curiously enough, is the first structure to be acquired, following which come the dotted central tail-feathers and the ruff. The entire ventral plumage becomes an even yellow, often before the first traces of scarlet appear, and while in the yellow stage, greenish-yellow tips appear on the back and rump, and bars of iridescent green on the mantle, and blue on the secondaries. An interesting sidelight is thrown on the colours of the female, which in general is barred with buff and black, with a chestnut tinge on the mantle.

The brown and buff are very plainly the more ancestral hues, and most resistant to alteration, while the black, having started on the road to specialization, yields more readily to new pattern and pigment changes. So on the mantle, for at least two annual moults, we find the black bars replaced by brilliant iridescent green, while the four wide cross-bars of chestnut or buff remain unaltered. The same is true of the tertiaries, with blue replacing the black. The flight-feathers are most conservative of all, and hold to the old order of things long after the plumage in general has become dominantly masculine.

In the Amsterdam Zoological Gardens the Black-necked Golden Pheasant has been bred true through four generations, with no indication of any intermediate characters appearing between it and the normal Golden. In such hens the hazel brown of the eye is appreciably lighter, more of a yellow than is normally the case. This correlated change of colour of the iris might be expected from my observations of owls (Owls of the Nearctic Region, "Eleventh Ann. Rep. N. Y. Zool. Soc." 1907, p. 9), and the experiments ("Zoologica," Vol. I. No. I. 1907, p. 28) which I have carried out in regard to melanism in doves.

Buffon in 1830 ("Œuvres complètes de Buffon," Tome XX. Oiseaux II. 1830) gives the following quaint and somewhat imaginary account of this phenomenon: "The female Golden Pheasant is a little smaller than the male; her tail is shorter, the colours of her plumage are most ordinary, and also less pleasing than those of our common pheasant, but at times she becomes as handsome as the male; one has been seen in England, with Lady Essex, which, during a period of six years, gradually changed her dull woodcock colour for the lovely colour of the male, from which she was distinguished only by her eyes and by the length of her tail. Intelligent persons, who have had an opportunity of observing these birds, have assured me that this change of colour takes place in the majority of females; that they commence when they are four years old, at the time when the male is wearied of them and mistreats them; they attain then the long and narrow feathers which in the male accompany the feathers of the tail; in a word, the more they advance in age, the more they resemble the male, as this takes place, more or less, in nearly all animals."

The third type of variation in Golden Pheasants is very important and of great interest. It is of such constant character that in 1865 Prof. Schlegel gave it the scientific name of *obscurus*, and for many years the Black-throated Golden Pheasant was considered to be a valid species of unknown habitat. His account of the bird is as follows: "For a number of years there could be seen in the collections of the dealers in live animals, also in the zoological gardens, a Golden Pheasant which differs constantly and from its earliest age from the common Golden Pheasant. Numbers of this pheasant are raised annually, even at Leyden, which for the most part are sent abroad. The dealers are accustomed to designate this bird as the Golden Pheasant of Java, probably because it was brought to Europe by the vessels coming by way of Java; but as the genus *Phasianus* is confined to the continent of Asia, it is probable that our vessels, being engaged in commerce between Java and the east coast of Asia, have brought this bird from some place on the coast. This bird, although resembling perfectly by its shape and the general distribution of its colours the common Golden Pheasant, can nevertheless constantly be distinguished at the first sight and in all ages by trenchant characters, such as are consequently easy to be fixed upon."

We now know that it has never been observed in a wild state, and that its occurrence in captivity is altogether casual and so far inexplicable. It parallels closely the occurrence of the black-shouldered peacock.

I have observed the following details in regard to this sport or mutation. Chicks of this form may appear without warning in a brood of otherwise normal chicks of normal Golden parents and grandparents. They may appear singly, as one in a brood of twelve, while I have known as high a number as four in ten. The following year the normal parents may produce nothing but normal chicks, or again a few Black-throated Goldens may be hatched. The eggs from which these birds emerged were, in several cases in which I marked the shells, laid before and after eggs which produced normal chicks. The eggs are in no way distinguishable from the others.

The chicks, however, are very distinct in colour, and both the juvenile and the adult male and female plumages are characteristic, and in the majority of cases constant in character.

Chick in Down.—Of a general dark seal brown, sometimes including the face; chin, throat and a crescent extending upward halfway around the neck, reaching to the ear-coverts creamy yellow; supraloral line from bill to eye yellow, and this sometimes extends narrowly across the forehead and encircles the eyes; small spot back of eye yellowish buff; iris, legs and feet dark brown.

Juvenile.—In general like the corresponding plumage of normal young Goldens, but a great deal darker; all the buffs are replaced by dark rufous, the same above and below. So we see a dull reddish-brown bird barred everywhere with black, more heavily and thickly on the dorsal surface. The chin and throat are white.

First Year Plumage.—Owing to the general rufous hue, the changes in this plumage are not nearly as well marked as in normal Goldens. The bird is intensely melanistic and erythristic.

Adult Male.—While there is a certain amount of variation, yet on the whole the birds of this strange mutation are remarkably uniform. The dorsal plumage of the general average differs not at all from normal Goldens, except that the wing-coverts are slightly darker and the pale buff and rufous outer margins to the flight-feathers are lacking or reduced to an indistinct mottling. The scarlet upper tail-coverts are decidedly of a darker tone, as is the general colour of the scarlet ventral surface. The iris, bill, legs and feet all share in this melanism, and show varying shades of dark yellow, the feet being sometimes quite black. The most important character, however, is the colour of the lores, face, chin, throat and upper breast. These regions are, on the whole, a uniform smoky black, with the exception of the ear-coverts, which are silvery. Some of the throat feathers have faint light shafts. This black dies out on the scarlet breast in the form of more or less distinct terminal bands. In the transition zone between the black and the scarlet glints of impure golden yellow are quite abundant. This anterior ventral area is the character by which this mutation is chiefly marked, and which sets it apart most trenchantly from the normal Golden.

Again attention must be called to the interesting fact that the development of plumage from chick through juvenile and first year to the adult is one of decided convergence, the full-plumaged cocks being much more alike than are any of the other stages.

ADULT FEMALE.—Much darker throughout than in normal female Goldens; it is a dark rufous instead of a buff bird. There is no paling even on the ventral surface, and the black bars and mottlings do not die out as they approach the mid line, but are continued quite across, the entire under-surface being thus uniformly banded. The chin and throat, instead of white, are almost black, slightly tipped with brownish. The lores, face and ear-coverts are quite black. Traces of the masculine ruff are visible in a slight elongation and a grey powdering of these feathers. The tail markings are like those of the normal female, the lateral feathers being predominately a very rich, dark rufous.

Several observers have recorded the appearance of Black-throated Goldens in crosses between Golden and Amherst Pheasants. One account (Thomas, "Proc. Zool. Soc.," 1911, pt. I. p. 6) goes as far as the F_3 generation and is as follows: "In Elliot's 'Phasianidae' is a coloured plate of a pair of *Thaumalea obscura* with their young, which were considered by him and some other ornithologists as a variety of *picta;* according to this plate the birds apparently bred true.

"In my pheasantry in 1907, three Amherst hens were mated with a Golden cock and produced a number of young called F_1, in the pedigree. In 1909 two pairs of these F_1 birds were mated, and from these two pens twenty F_2 chicks were hatched. Amongst them were three chicks of a deep chocolate brown, in startling contrast to the others, which were cream colour with a bronzing of russet on the back and throat. The down of these *obscura* chicks was of a uniform dark brown to the skin, and each eye was rimmed with a finely pencilled cream line, which was connected by another cream line across the top of the bill, giving the quaint appearance of a pair of spectacles; there was also a cream patch on the throat, varying in size in each individual, sometimes being a mere spot. The legs were a dull olive brown. These brown chicks were produced from both pens, and were of both sexes, but unfortunately only one of the three (a cock) was reared. *Thaumalea* birds attain adult plumage only in the second year, so it was not till July this year that my surmise that *obscura* had been produced was confirmed. The cock has the same barred tail (pattern, Amherst; coloration, Golden), and the same dark brown on head and throat and neck, as the bird depicted on Elliot's plate, but his breast is a duskier red and the crest and mantle paler. When a chick, his coloration was similar to the young shown on Elliot's plate, only the brown was a deeper, richer shade. This F_2 cock was mated in the spring of 1910 with two F_2 hens, his sisters. The darkest hens were picked out, with golden eye-skin (yellow with red round the rim); Amherst hens are lighter and greyer in plumage than the Golden, and the eye-skin is a greenish blue. From this mating eight birds were hatched, four cream-coloured and four dark chicks; these last had precisely the same coloration as that of the father. The numbers tally with those to be expected according to Mendel's law. I hope to obtain more evidence next season from the same birds, and to have better luck, for all these eight chicks lived only a few days. As I intend to breed again from him, I cannot

PLUMAGES OF THE BLACK-THROATED GOLDEN PHEASANT

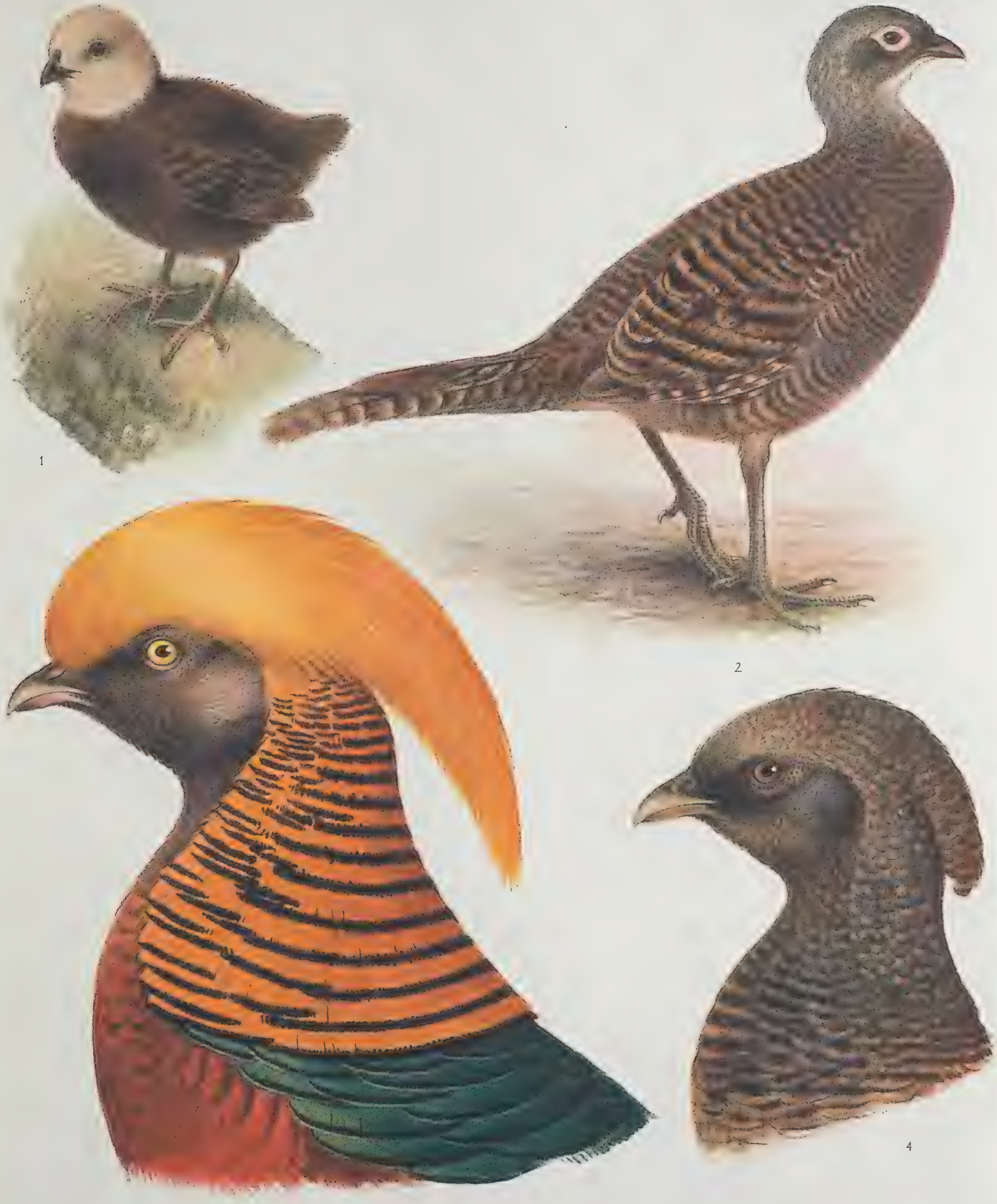
Chrysolophus pictus, var. *obscurus*

FIG. 1. The mutational changes are more marked in the chick than in any later plumage, there being no resemblance to the normal colours.

FIG. 2. The juvenile male plumage is much darker than that of the normal Golden Pheasant.

FIGS. 3 and 4. The adult male and female, although considerably darker, yet show the same general markings as the normal birds. The most radical divergences are in the face, throat and upper breast, which are smoky black in this variety.

PLATE LXXI.



PLUMAGES OF THE BLACK-THROATED GOLDEN PHEASANT.

show you the skin of the adult *obscura* cock, but only some feathers plucked from his breast and back, and the skins of his two brothers and of two of his sisters. An examination of these breast-feathers plucked from *obscura*, and of some of the breast-feathers of the cock marked '*semi-obscura*,' will show the reason of the so-called 'duskiness' of hue; each feather has a bar of metallic green on the inner half, while the outer end of it is red. You will observe in the Golden cock that the breast-feather is red throughout.

"Apparently, then, *Thaumalea obscura* is a hybrid recessive mutation, breeding true, as shown in Elliot's plate and also in my experiment this year, according to Mendel's law. I have used the word 'mutation,' but these birds may possibly be a reversion to the ancestral parent form of both 'species' of *Thaumalea*.

"By whatever name it is called, this hybrid is undoubtedly a homozygote for pattern and colour, pure and permanent, transmitting these characters to its descendants. Cross-breeding between these two varieties of *Thaumalea* produces a new form, owing possibly to the meeting of characters never previously combined, and as they are constant it is evident these have an affinity and have become inseparable.

"On such lines evolution might be conceived as having proceeded fairly rapidly towards the separation of species."

In this instance there seems to occur somewhat more variation in colour and pattern, at least in the chicks, than we find in the black-throated birds from normal Golden parents. But aside from this, the mutation is identical. So that whatever readjustment of unit characters occurs in the production of this form, it may result from unstable conditions in a normal pair of Goldens in captivity as well as in hybrids with an Amherst cock and Golden hen for parents. It seems to me an excellent illustration of the appearance of a true mutation species, induced in this case by captive and not feral conditions, and quite comparable to the black-shouldered peacock. As the change in colour is chiefly melanistic, it is doubtful whether we can consider the theory of atavism, as the darkening of the scarlet is an advance in specialization, not a degeneration as in the case of the xanthochroism in the masculization of the barren hens.

Perhaps the most remarkable and surprising fact in connection with this mutation, is the very distinct character both of colour and pattern in the natal down of the chicks. These, as we have seen, actually differ much more from each other than do the fully plumaged adult cocks—the reverse of what usually obtains among nearly related forms, where the chicks are often indistinguishable, while greater and greater differences become apparent as the ontogenetic sequence of plumages approaches the fully adult stage.

EARLY HISTORY

The first important mention of this bird is by Albin in his "Natural History of Birds," published in 1740, where he calls it the "Red Pheasant Cock from China," and gives a very bizarre figure. Seven years later Edwards criticizes this, and in his turn presents a plate of the "Painted Pheasant from China," as he terms it, with the entire under-parts of a delicate pink.

His summary of the knowledge of the bird at that date is as follows: "These birds of late years are frequently brought from China: I have seen several of them in the possession of our nobility, and some curious gentlemen, and have been favoured with one of them, newly dead, by the lady of Sir John Hathcote, Bart., which has enabled me to be more exact in every particular of my figure than I could otherwise, or any have hitherto been. These birds are pretty hardy, and bear our climate very well; and I believe, were they brought with their hens, might be bred with a little care. Sir Hans Sloane has the cock now living, which this figure represents; and I think, if I remember right, he has had it about fifteen years."

Thirteen more years passed before a scientific name was bestowed on it by Brisson, *Phasianus aureus sinensis*, descriptive, indeed, but which unfortunately had the demerit of too extreme priority, and must yield to Linnaeus' *Phasianus pictus*, given in 1766. The succeeding nomenclatural history was undisturbed by incident until sixty-six years later, when Wagler removed the Golden Pheasant from *Phasianus* and called it *Thaumalea.* But here complications arose, for in the preceding year an entomologist named Ruthe had applied this term to a group of Diptera. So the next synonym in order, *Chrysolophus*, so called by J. E. Gray in 1834, stands as the accepted generic name.

The fact that Linnaeus placed the Golden Pheasant in his genus *Phasianus* carried no especial significance, owing to the all-inclusiveness of that group in the mind of the Swedish naturalist. When both this and its complementary species, the Amherst, were removed from Phasianus by Wagler, they were with no uncertainty given a genus of their own, and there has never been any doubt as to the correctness of this view. Elliot in his "Monograph of the Phasianidae" is not altogether consistent, as under the head of Classification on page xiii, he says: "This is followed by Phasianinae, comprising Phasianus, Thaumalea, Euplocamus and Ithaginis," while later, on pp. xx and xxi, he represents the subfamily Phasianinae as containing only the first two of these genera, while the two latter are grouped under Euplocaminae.

SYNONYMY

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Painted Pheasant from China, Edw. Nat. Hist. B. II. 1747, pl. 68.

Phasianus aureus sinensis Briss. Orn. I. 1760, p. 271.

Phasianus pictus, Linn. S. N. I. 1766, p. 272; Gm. S. N. I. pt. II. 1788, p. 743; Latham, Ind. Orn. II. 1790, p. 630; Bonnat, Tabl. Encycl. Méth., I. 1791, p. 186, pl. 88, fig. 4; Shaw, Mus. Lever. 1792, p. 204, pl.; Hayes, Osterl. Menag. 1794, p. 5, pls. 5 & 6; Pallas, Zoogr. Russo-Asiat. II. 1811, p. 86; Temm. Pig. et. Gall. II. 1813, p. 341, III. 1815, p. 671; Vieill. N. Dict. d'Hist. Nat. XI. 1817, p. 41; Steph. in Shaw's Gen. Zool. XI. 1819, p. 231; Werner, Atl. Ois. d'Eur., Ord. 10, 1828, pl. 3; Griff. ed. Cuv. III. 1829, p. 23; Lesson, Traité d'Orn. 1831. p. 495, pl. 83, fig. 2; Schinz, Nat. Abbild. Vög. 1833, p. 250, pl. 96; Jard. Nat. Lib., Orn. IV. 1834, p. 209, pl. XVIII; Schinz, Nat. Vög. 1853, p. 149, pl. 72; Gadow, Proc. Zool. Soc., 1882, p. 327.

Le Faisan doré D'Aubent. Pl. Enl. pl. 217; Buff. Hist. Nat. Ois. II. 1771, p. 355.

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Thaumalea picta Wagler, Isis, 1832, p. 1228; Gray, List of B. pt. III. Gall. 1844, p. 24; id. Gen. B. III. 1845, p. 497; id. Cat. Hodgson, ed. I. 1846, p. 124; Swinhoe, Proc. Zool. Soc. 1863, p. 307; Sclater, List of Phas. 1863, p. 5; Fitz. Atl. Nat. Vög. 1864, fig. 228; Gould, B. Asia, VII. 1866, pl. 19; David, N. Arch. Mus. Bull. VII. 1871, p. 11 [Sze-chuen]; Elliot, Monog. Phas. II. 1872, pl. XV [text]; David and Oustalet, Ois. Chine, 1877, p. 414 [S. and S.W. Provs. of China as far as Sin-ling Mts.]; Pratt, To the Snows of Tibet, 1892, pp. 22, 48, 236; Tegetmeier, Bull. Brit. Orn. Club. VII. 1898, p. XXVII; Tegetmeier, Pheasants, 1904, p. 204; Mitchell, Proc. Zool. Soc. 1911, p. 521.

Chrysolophus pictus J. E. Gray, Ill. Ind. Zool. II. 1834, pl. 41, fig. 2; G. R. Gray, List Gallinae Brit. Mus. 1867, p, 29; id. Hand-list of Birds II. 1870, p. 258; Swinhoe, Proc. Zool. Soc. 1871, p 398 [W. China to Koko-nor]; Grant, Cat. Game-birds Brit. Mus. XXII., 1893, p. 339; Grant, Hand-book of Game-birds, II. 1897, p. 45; Seth-Smith, Avicultural Magazine, IV. 1898, p. 142; Sharpe, Hand-list of Birds, I. 1899, p. 38; Nehrkorn, Katalog der Eiersammlung, 1899, p. 194; Oates, Cat. Birds' Eggs Brit. Mus. I. 1901, p. 58: Finn, Journ. Bombay Nat. Hist. Soc. XIV. 1902, p. 578; Rothschild, Bull. Brit. Orn. Club, XIV. 1904, p. 58; Finn, Bird Notes, IV. 1905, p. 78; Finn, Avicultural Magazine, N.S. III. 1905, p. 102; Ticehurst, Bull. Brit. Orn. Club, XIX. 1906, p. 34; Blackwelder, Research in China, Carnegie Pub. 54, I. Pt. II. p. 489; Heinroth, Zoologischer Beobachter, XLIX. 1908, p. 21; Shipley, Proc. Zool. Soc. I. 1909, p. 346; Finn, Game-birds of India and Asia, 1911, p. 51; Thayer and Bangs, Mem. Mus. Comp. Zool. Harvard, XL. No. 4, 1912, p. 143.

Epomia picta Hodgson in Gray's Zool. Misc. 1844, p. 85.

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Chrysolophus obscurus Gray, List Gallinae Brit. Mus. 1867, p. 30; Grant, Game-birds Brit. Mus. XXII. 1893, p. 341; Sharpe, Hand-list of Birds, I. 1899, p. 38; Finn, Avicultural Magazine, N.S. III. 1905, p. 102; Heinroth, Journal für Orn. 1912, p. 316.

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Chrysolophus pictus Finn, Avic. Mag. (2), III. 1905, pp. 102–106.

Thaumalea picta Tjebbes, Haarlem Arch. Neerl. Sci. Soc. Hall (3), 1917, p. 316 (hybridizing and genetics); Cerepooa, Nasa pticev. rizus, 8, 1908, pp. 69.

LADY AMHERST PHEASANT

Chrysolophus amherstiae (Leadbeater)

NAMES.—Specific: *amherstiae*, after the Countess Amherst. English: Lady Amherst Pheasant. German: Diamantfasan; Amherstfasan. French: Faisan D'Amherst. Native: Séng-ky (Fowl of the buds, from its favourite food of bamboo sprouts, Chinese); Kwa-kwa-chi (Chinese: onomatopoetic); Wokree (Kachins and other Burma-Yunnan tribes).

BRIEF DESCRIPTION.—Male: Top of head bronze green; long occipital crest dark red; cape white, margined and barred with black glossed with steel blue; chin and throat black; mantle, shoulders and breast dark iridescent green; back black with a wide yellowish buff fringe; rump fringe scarlet in the centre, white laterally; visible parts of wing chiefly steel blue; long upper tail-coverts black and white with long scarlet tips; central tail-feathers white with curved blue bars and wavy black lines on the interspaces; the other rectrices lack the latter and show much brown; under-parts back of the breast pure white, marked with brown on flanks; facial skin blue. Female: Similar to the hen golden pheasant, but with considerable bare facial skin of a blue colour.

RANGE.—Eastern Tibet and western China.

THE BIRD IN ITS WILD HOME

IN some cases we were made aware of the presence of pheasants as soon as we entered their haunts. Their challenge would ring out over the other voices in the jungle, or the flash of their feathers would come to us as they rocketed past down some gorge. Again, other pheasants seemed the minor note in all their surroundings. They were to be discovered only by the most stealthy approach, and even when located by faint sounds of scratching among the leaves, a few recent tracks would often be all that rewarded an hour's stalk.

The Pheasant of Lady Amherst was of this character, and was to us for days but a phantom, holding us keenly to the search by the finding of an occasional feather or tracks, but not until many days had passed permitting a glimpse of its royal self.

Its home was a romantic and beautiful one, on the frontier of Yunnan and Burma far to the north in the very heart of Asia. Here the pellet of hail or the snowflake which falls upon the stunted vegetation of Tabu-pum or any of its sister peaks, if driven by the bitter, icy Tibetan blasts to the westward of the ridge, has before it a long and varied journey ere it mingles with the tepid tropical waters of the Bay of Bengal at the mouth of the Irrawaddy. Starting at a height of about two miles above the sea, the melted flakes form most beautiful rushing torrents, flowing through deep ravines. The steep sides of these lofty valleys are the natural pathways of the hardy pheasants which wander southward at the beginning of winter from their mid-Yunnan or Tibetan summer quarters.

Even in the middle of the day we found these ravines, with their icy torrents, cool, and ever damp, and odorous of clean earth and spicy leaves. Life is always present; high overhead a pair of bulbuls sway on a tall bare bamboo; a tree with a thousand roots hums with the wings of a myriad bees, warmed into a few hours' life by a slanting

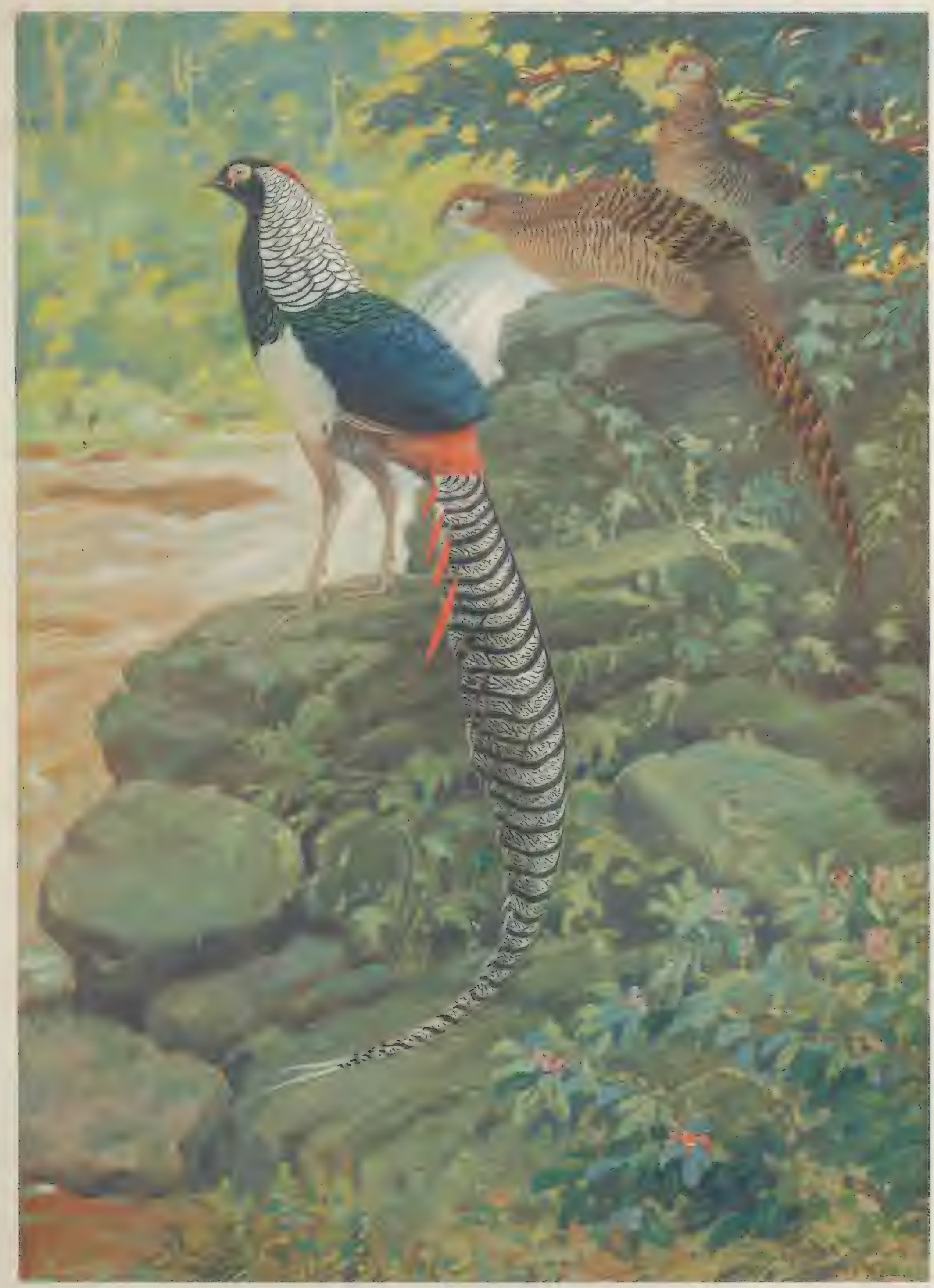
PLATE LXXII

LADY AMHERST PHEASANT

Chrysolophus amherstiae (Leadbeater)

To steep, wild valleys and ravines of icy mountain torrents come the Amherst Pheasants to feed. The cocks, in all their glory of ruff and body plumage, are beautiful beyond description, the scarlet side-feathers glowing like shafts of rubies, and the eyes, matching the black and white of the cape, gleaming with the very essence of the wilderness.

PLATE LXXII.



ALBERT FRISCH, BERLIN

LADY AMHERST PHEASANT.

ray of sunlight. The orchids and trailing moss which cast long, wavering shadows on the foam beneath are made to give up their sheltered insects by many small tits and babblers.

On the damp earth at the edge of the torrent is writ the passing of many nocturnal creatures; a sambur deer came to drink last night and returned to the jungle by another passage through the great split boulders; a cat of some small species crouched close to a side rivulet—and we can re-picture her very attitude as she daintily lapped up the icy drops—her shoulders high above her back; tail-tip upturned; yellow eyes gazing keenly through the chill blackness of the night. A few steps up the bank is a pile of fresh feathers—a thrush which may have been the victim of this same feline. Around all is woven a lesser tracery of weasels and martens, and the still finer lacery of the four-pointed star prints of birds.

But these latter are not nocturnal and are the most interesting of the actors in this haunt of the Lady Amherst Pheasant. As we sit half hidden by the brightest of green bamboo sprouts, a chubby little bird dashes to a boulder on the opposite shore and vigorously wags its tail up and down. When it darts again into the air after an insect, its tail shows as a wide rufous fan, otherwise it is a sombre slaty blue. It is chased away by a pair of white-capped redstarts, with more rufous and less slate and caps of snow. Clean-cut and alert as wrens, every movement is a delight as they wag and bow and flirt their long tails, alighting now on a partly submerged stone with the water trickling over their feet, now on a dry boulder to snatch an unfortunate dragon-fly larvae, emerging from his watery life to sudden aerial death.

But the master of the torrent now appears in the distance and we forget all else: a sturdy rail-like bird, larger than a thrush, short, upturned tail, eyes like stars, long trim legs and toes. From beak to tail it appears of a general dark chocolate hue—no touch of brightness to flaunt its approach. But we know from its actions that it is indeed the master sprite of these icy streams. No mere wagging of the upturned tail, but a graceful elastic dipping of the whole body—a flexing of the legs, half-open flirt of wings and tail—what could ever catch this steel spring in feathers off its guard?

From boulder to boulder it flits with rapidly beating wings, nearer and nearer; it plunges its whole head beneath the white curl of water and is up upon the top of the boulder again like an electric spark.

Suddenly we gasp to see the dipper dart down into the centre of a seething turmoil and vanish. Ten, fifteen seconds pass and several feet farther down we see a struggling form emerge: a drowning animal, a wounded bird—no, a living dipper, fighting against the current with all the strength of its short, strong wings. It reaches the mossy surface of a log, and stands dipping as before, as dry as the butterfly passing over its head. Again it dives, and again and a dozen times, in this very spot. How we long to see it at work, but the boiling, foaming waters are as opaque as the rock itself. The water is so cold that one's hand curls up as if from an electric shock, and yet this splendid bird of these wild mountains minds it no more than do we the shadow after sunshine.

Day after day we searched and watched for the pheasant which we knew must haunt these streams. A tell-tale feather had revealed the presence of the Lady Amherst, but it seemed as if the bird would never show itself to our eyes. But fate was kind, and far up the ravine, beyond the last glimpse of the huts of the wild Kachins, we came upon a dripping mass of short bamboo which partly hid a sunny bank of pebbles. Scratching among these was the object of our search—a male Lady Amherst Pheasant in all its glory of ruff and body plumage. The scarlet side-feathers shone like shafts of rubies and its eyes, matching its cape, gleamed with the very essence of the wilderness. Among the shadows of the overhanging bamboos we made out a hen pheasant. It was remarkable to see the large size of some of the pebbles which these birds overturned with their vigorous scratching. Now and then a stone larger than an egg would stick tight in the damp sand and the birds' toes would slip smoothly over it, but at last it would give, and more by prying than scratching, the pheasant would roll it over.

Then both would search eagerly for some kind of food, flicking the damp sand aside and snatching at what they found. This source of food proved to be almost entirely earwigs and spiders of various species. From under stones and bark I collected almost forty species of the former insects, many of them new to science, and in the crops of two male Amhersts I found the following:

(*a*)—Spiders (3 *Drossodes ignobilis* Petrun., 2 *Dipoena tristis* Petrun., and 2 *Pholodromus tabupumensis* Petrun., all new species); earwigs.

(*b*)—A mass of earwigs of five or six species, mostly immature, all pebble-haunting species; several spiders and small beetles; fifteen bamboo sprouts; several pieces of fern fronds.

This pair of birds—the first we had seen—were very attentive to each other, and when either had uncovered an unusually attractive supply the other was called with a low, subdued chuckle. This was not surprising on the part of the cock, but to hear the hen summon her mate when several feet away, was an exhibition of feminine altruism which is seldom seen in the bird world. They were so busily engaged in feeding that although every now and then the cock would stand on very tiptoe and scan the whole horizon, yet by keeping absolutely motionless we escaped discovery, thanks chiefly to the slowly waving blades of bamboo which shielded us. The hen trusted to her mate, and seldom gave even a hasty glance around.

They were remarkably persistent in their search for food, and during a space of ten minutes did not once leave the two square yards of pebbled promontory which extended into the rushing waters.

The only visitors during our watch of the pheasants were a band of titmice, and once the dipper flew past and perched for a moment near the white-caped Amherst. Hardly had it balanced on the slippery moss when it darted toward the pebble beach, snatched an earwig or some similar morsel in the very face of the cock, and was off again as the larger bird made a dash at the intruder.

The pheasants now slowly worked their way around a large boulder marking a turn of the stream, and indeed it was to the eddying swirl of waters which this boulder turned aside that the pebble beach owed its existence. The birds waded in the shallows and the long, drooping tail of the male Amherst trailed in the water. We crept cautiously after them, but they had vanished into the bamboo tangle.

Nothing spectacular or unusual was vouchsafed us in this first glimpse of these beautiful birds, but the very sight of them repaid us for all the hard marching and toilsome climbs, the torrid heat of midday and the icy winds which at night searched out every corner of our tent and sleeping-bags—all of which we had to experience to win our way to the home of the Amherst Pheasant.

HAUNTS OF THE AMHERST PHEASANT IN YUNNAN

The home of this bird is a romantic and beautiful one in the very heart of Asia. Starting at a height of two miles above the sea, the melted snowflakes form most beautiful rushing torrents. The steep sides of these lofty ravines are the natural pathways of the hardy pheasants, living in company with bulbuls and babblers, amid orchids and trailing moss, roosting among the vines and swaying branches of the Chinese mountain forests.

PHOTOGRAVURE PLATE 62

HAUNTS OF THE AMHERST PHEASANT IN YUNNAN.

GENERAL DISTRIBUTION

The Amherst Pheasant has been observed in the extreme eastern parts of Tibet proper, and in the mountains of western Szechuan and northern Yunnan as far west as just within the limits of Burma, not more, however, than a few miles beyond the frontier. As in the case of its near relative, the golden pheasant, the exact extent of its range is unknown, and will remain so until the centre of this great continent is opened up for exploration by white men.

GENERAL ACCOUNT

Our ignorance of the wild habits of the Amherst Pheasant is about as complete as in the case of its golden congener. Monsieur Carreau, a French missionary living in Tibet, writes as follows ("Bull. Soc. d'Acclim." Ser. 2, VII., p. 582) to the Société Nationale d'Acclimatation de France : "The Pheasant *Houa-ze-Ky*, the Flower Pheasant of the Chinese, always inhabits very rocky places. Whenever I have seen this bird flying upwards, I have always been able to shoot it; but if it was descending, I could not procure it, for then it disappeared with excessive rapidity. After having pursued it several times, I have found it more convenient to obtain it in the same manner as the natives, who lay in wait for it during the winter and catch it in snares. When the mountains are covered with snow, and the streams frozen, the Flower Pheasants are obliged to descend to the plains for water, but as soon as they are satisfied they ascend again. In the paths these birds follow each other in a line; and as they go in flocks, and the snares are few in number, the Chinese do not make much from the plumage and flesh of this beautiful pheasant. Ta-lin-pin is situated in the 29th degree of latitude N., and the 102nd degree of longitude E. : the heat of these places is very great, as they are surrounded by high mountains, and with very little vegetation. The mountains are covered with brambles, briars and thorns, and also with grassy places; in these spots the Amherst Pheasant is met with in abundance. It is an error to think that, like other pheasants, it is met with in the forests; I have never found it there, and as in the neighbourhood of Ta-lin-pin it only exists where there are no forests, I doubt very much if bushy tracts are to its liking. The more rocky and desolate the mountains, the more certain are you to find the Flower Pheasants, in companies composed of from twenty to thirty individuals.

"The habits and economy of the Amherst Pheasant naturally accord with the places in which it delights; it is an extremely wild bird. Last year I kept one of these pheasants in a stable covered with straw; it hid itself so frequently and so well that once I was more than fifteen days in the belief that it was dead. I fed it with bread and rice, and it became very fat. If this bird should be introduced into Europe, it would be useless to endeavour to make it comfortable if it has not in the aviary some place where, at the least noise, it can hide itself, otherwise I doubt if it can be preserved. I think, from the temperature of the mountains it inhabits, that the climate of France would be suitable for the Flower Pheasant. These particulars respecting the Lady Amherst's Pheasants are perfectly exact, since I have myself frequently hunted, captured, fed, and raised them. They would increase easily in Europe, provided they were not too much exposed to the heat of the sun, and that shrubs were grown in the aviary to allow their hiding when frightened."

Père David writes ("Oiseaux de la Chine," 1877, p. 416): "*Le Faisan de Lady Amherst* lives throughout the year on the highest of the wooded mountains at the west of Setchuan, of Yunnan, of Kouy-cheou and the highest mountains of eastern Tibet. It affects particularly the tangled masses of bamboo which grow at an altitude of six to nine thousand feet, the buds of which constitute its favourite food; it is from this that the Chinese name *Séng-ky* (Fowl of the buds) has been derived. Caught while young, it is easily reared and breeds readily in captivity, as one may assure one's self by the experiments made at the college at Moupin. It is a strong bird, which cares nothing for cold or snow, and accommodates itself to all sorts of food, like our domestic fowl. In the wild state it is very jealous and will not allow the golden pheasant, which is the only one able to compete with it, to approach the spot where it is established; also one never meets these two brilliantly coloured pheasants on the same mountain or in the same valley."

Although the Amherst Pheasant is hardy, and able to live in regions where snow falls throughout the winter, yet in all the places in Yunnan where I have observed these birds or have been able to get reliable information I have found that they show an appreciable migration. They either shift downward from the heights into more sheltered valleys or move southward along a ridge to some southern exposure. It is certainly lack of proper food, and not desire for shelter, which prompts such movements, as these pheasants can stand almost any climate, however rigorous.

On two different occasions I have seen a cock in the company of two hens, which would suggest that these birds may be polygamous, but I am inclined to think that ordinarily they associate in pairs. In the autumn several families collect in a flock and remain together throughout the winter. At this season the young, being in the garb of the female, give the impression of a great preponderance of hen birds. The succeeding year the young males and females seem to live solitary lives, as, when one of these is trapped, it is not often that another bird of the same age is caught for some time or in the immediate vicinity. The autumn flocks are augmented by these second-year birds, sadly depleted in numbers, however, as their enemies must exact a heavy toll from their inexperience throughout the year and a half before they reach full strength and plumage.

Judging from the numbers of birds snared and shot by the Chinese I should think that the Amherst was much rarer than the golden. It resembles the latter in many particulars, such as its choice of haunts, voice, courtship and general diet, and indeed much of the account which I have given of the golden would apply without alteration to the present species.

The Amherst seems to take to wing much more readily than its relative, and I have put up several birds when alone by coming upon them suddenly, when it would be probable that a golden would have escaped on foot. This habit, however, is possibly dependent on other things, such as the character of the surroundings. Birds which live among more or less open bamboo scrub are much more likely to rise readily than those which live in high, dense forest. This is borne out by the experience of a sportsman who has hunted the Amherst Pheasant in Yunnan. (Davies, "Ibis," 1901, p. 408.) He says: "This species is about as common as the last mentioned (*Phasianus elegans*), and is found at fairly high elevations, usually in forest. It is difficult to make individuals fly, and when they rise they do so without crowing and with very little noise of the wings. They appear to be 'soft' birds, very easily killed. The note is a peculiar rasping sound. Specimens were obtained in W. Yunnan at 7,000 feet, and in Kweichow at 7,700 feet." The males seem always conspicuous, and invariably it was that sex which caught my eye. If a hen was in view and the male hidden amid the bamboo, the chances were overwhelmingly against my seeing her first. The white cape and tail assimilated with nothing that I could see, and stood out strongly even when the bird was motionless.

The first birds to be brought to Europe were two living males, the original account of which I shall give under Early History. As we have seen, Mr. Leadbeater described and figured these in the "Transactions of the Linnaean Society" for 1828. For many years after this no more specimens were obtained; indeed it was 1869 before the species was represented in the London Zoological Gardens. In July of this year five males and a female were deposited. Of these we read (Sclater, "Proc. Zool. Soc.," 1869, p. 468): "After many unavailing efforts, Mr. Stone had succeeded in adding this magnificent pheasant to the list of introduced species. Unfortunately, only one female survived to reach this country, the rest being males, adult or in change of plumage. The female of the Amherst's Pheasant was previously unknown, but turned out, as might have been anticipated, to resemble nearly the corresponding sex in the gold pheasant (*Thaumalea picta*). Mr. Stone had received these birds from his correspondent in Hankow; but Mr. Sclater had been informed by Mr. Swinhoe that they had been originally obtained for him by a French missionary priest resident at Ta-kien-lieou, at the foot of the Yung-ling mountains, in the further part of the province of Setchuen. The range of this bird was thus proved to extend from the Burmese frontier of Yunnan (where it was obtained by Dr. Anderson) into the province of Setchuen."

From this time on, Amherst Pheasants were purchased from time to time, and gradually became well known both in public collections of birds and private aviaries. Their rarity during the earlier years is attested by an auction sale of birds at the Zoological Gardens of Antwerp, where in 1873 a pair of Amhersts brought 2,850 francs ($800 or £160) and a single cock $250.

The Amherst Pheasant in captivity breeds almost as readily as the golden, and it is probable that when the bird as a wild species has become extinct, it can be propagated indefinitely in confinement. The Amherst crosses freely with the golden, the hybrids being perfectly fertile, and of unusual beauty. The general care and régime of the young differs in no particular from that of the golden. The cocks are on the average pugnacious and untrustworthy, and show especial animosity toward cock goldens, in this respect supporting the jealousy between wild cocks of the two species mentioned by Père David. The length of incubation is from twenty-three to twenty-four days.

Of eighty-seven individuals which have been kept in the London Zoological Gardens, one reached a maximum age of eight years and one month, while the average length of life was twenty months. Another record ("Bird Notes," N.S.I. 1910, p. 54) states that a female which assumed cock plumage at the age of seven years was still alive at the age of eleven years and four months.

A set of seven eggs from southern Szechwan, found in a slight hollow in the ground among bamboo scrub, are pale creamy white in colour, and average 36 × 45 mm. Eggs laid in captivity are usually of a richer cream colour.

As regards acclimatization, thirty-five years ago it was said that in a certain part of Ireland large numbers of both golden and Amherst Pheasants were breeding together in a wild state. And on an estate in Scotland Amhersts had then been at liberty for years, keeping to one particular section and not allowing other pheasants to interfere or invade their range. Since then little has been accomplished in the way of inducing this species to breed wild, and in only a few places in England are they kept outside of private aviaries. In the United States there has been no attempt to bring about the acclimatization of Amherst Pheasants.

DETAILED DESCRIPTION

Adult Male.—Entire top of the head from lores to rear crown dark bronze green, the concealed portion of the feathers black with a large, white oval shaft-spot. On the hind crown a chestnut tinge appears below the green tip, but there is no gradual transition into the elongated feathers of the occiput, which are blood red and form a long crest. These feathers are narrow and stiffened and almost without barbules.

The cape feathers, springing from the nape and hind neck, are pure white, with a conspicuous terminal margin of black, more or less strongly glossed with steel blue. About half-way down the length of the cape a straight transverse steel-blue bar appears, becoming strongly developed on the posterior feathers, and almost wholly concealed when the cape is closed. In comparison with a corresponding feather from the cape of a golden pheasant, we find that in the Amherst it is much less specialized, both as to colour, shape and structure. It is comparatively long and narrow, and rounded, not truncate at the tip, and thus when widely spread does not resolve into such perfect alignment of concentric bars as in the golden. The vane is also homogeneous throughout, exhibiting no loss of barbules toward the tip.

The mantle is much the same as in the golden pheasant, except that the feathers are more rounded and the green is less bronze in character. Lower back and rump black, with a very wide fringe of golden yellow buff, which is separated from the black by a wide subterminal bar of dark green.

Lesser wing-coverts chiefly dull brown; medium and greater coverts, and exposed parts of the inner secondaries and tertiaries rich purplish blue. Primaries brownish black, margined or toothed with buffy white on the outer web. Outer secondaries black, unmarked.

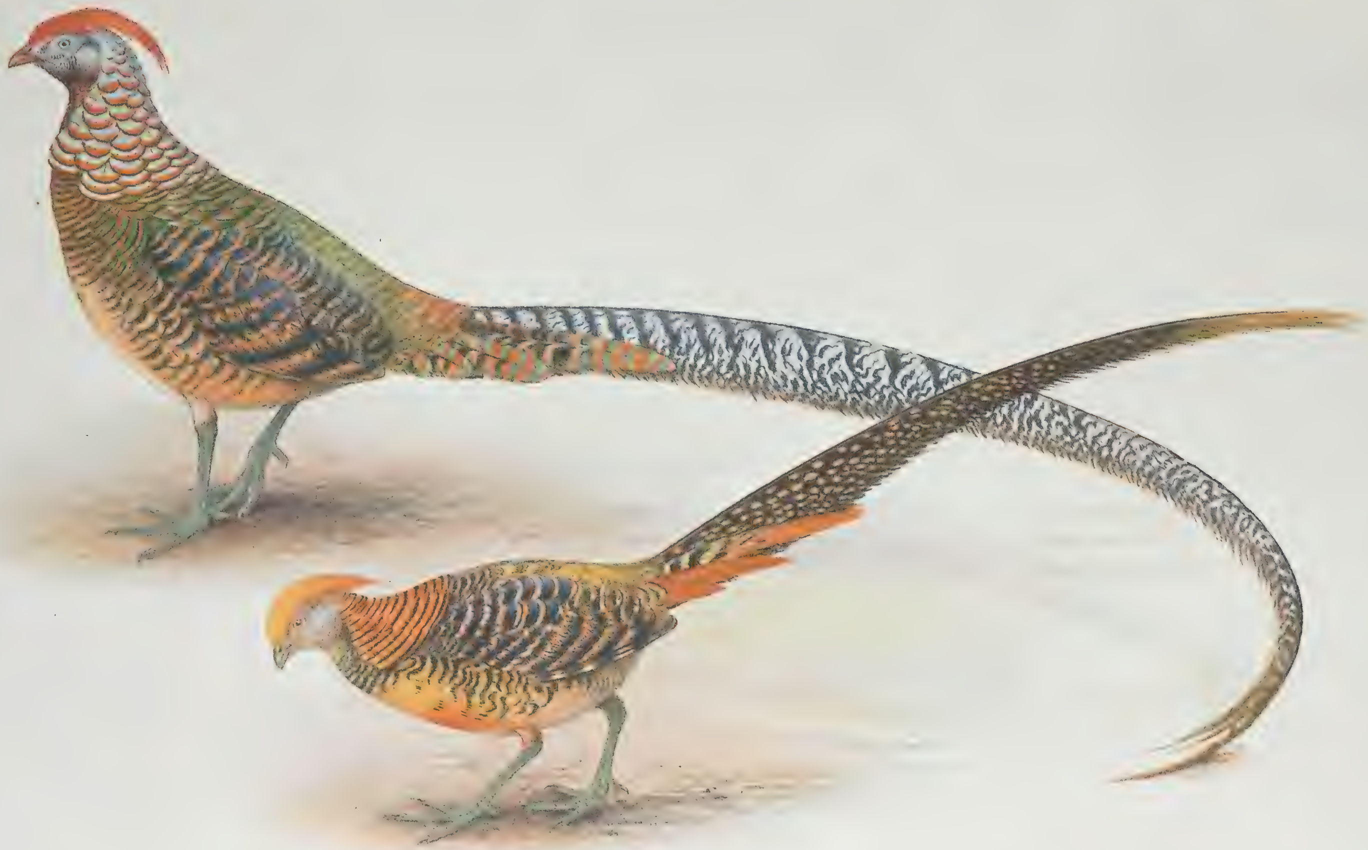
Shorter upper tail-coverts black, the lateral ones fringed with white and the central ones with scarlet. This scarlet sometimes extends a considerable distance up as a mid-line into the anterior zone of golden buff. Long coverts are of great length, white irregularly barred with metallic blue and green and widely tipped with orange red.

Tail-feathers eighteen in number, the central pair sometimes seven times as long as the outer pair. These central feathers are pure white with about twenty-

VARIATIONS IN GOLDEN AND AMHERST PHEASANT HYBRIDS

Two general types result from crossing Golden and Amherst Pheasants, one with a pale, bluish-white, red-tipped ruff, the other with the cape more of the Golden pattern.

PLATE LXXIII.



VARIATIONS IN GOLDEN AND AMHERST PHEASANT HYBRIDS.

four arched cross-bars of glossy steel blue, each some 10 mm. in width and with interspaces of twice that width. These interspaces are broken up with spots and irregular, broken lines of black running generally at right angles to the arched bars. The outer web of the remaining feathers is barred straight across with black, the interspaces being quite free from markings, but olive brown for the greater part, the white showing only near the shaft. The inner webs are black, irregularly mottled and lined with white, the relative amount of colour demanding this description. The ventral surface of all but the central pair of feathers is dark olive or brownish black.

Lores, chin, throat, ear-coverts and side neck dull brownish black, sometimes slightly glossed with dark green. Breast like the mantle, but with a wide, convex fringe, the latter form giving it a jet-black appearance, although it is of the same bronze green as the remainder of the feather. Lower breast, straight across behind the green zone, belly and sides pure white. The flanks and thighs are barred and marked with dark brown. Under tail-coverts irregularly black and white, the former sometimes with a slight glossing of green.

Bare facial skin blue, changing to greenish white near the gape; the former area sparsely covered with minute featherlets. Iris light cream; mandibles yellowish horn, upper darker; legs and feet, slate or bluish horn.

Length, 1200 mm.; bill from nostril, 16; wing, 215; tail, 910; tarsus, 80; middle toe and claw, 65. Spurs not very large and slow growing, but thin and sharp, 8–10 mm.

Adult Female.—A large series of this species, compared with the hens of the golden pheasant, shows no constant characters of size or of colour of feather. The skin of the face, however, is scantily feathered, quite bare in full-grown birds and of a blue colour, as in the male.

VARIATIONS

I have observed, and later dissected, several females in the process of acquiring male plumage, and when in this stage they are of unusual beauty. This is only transitional, as after a few moults the plumage closely resembles that of the male bird. Even in the full-plumaged male there is an evanescent tinge of blue on the terminal part of the cape feathers, and when the changing female has reached a half-way stage, this same tint is quite dominant and forms a beautiful pattern, not at all like the ruff pattern of the adult male. The feathers in this transitory condition are of a very delicate bluish grey with several large, irregular markings, both shaft-lines and spots, of very pale red. The fringe is narrow and black, then comes an equally narrow band of fiery copper bronze, then a wide area of clear grey, and finally a narrow, irregular black line before the main area of bluish grey is reached.

First Year Plumage.—This differs from the juvenile and adult female chiefly in the transitional stages of the head, neck and central tail-feathers, the plumage of which, coming in late, partakes more or less of the adult patterns and colours.

No two cocks are exactly alike. The body feathers in general are banded with rufous and black, the rufous becoming pale buff on the terminal band and on the primaries. The lower back and rump are rufous brown, mottled with black, and tipped with a plain, rufous band. The head and neck show varying degrees of the black, green and white of the adult. There are glints of bluish and greenish gloss on the coverts and inner secondaries. In some individuals the tail is the most advanced region in pattern and colouring, approximating that of the adult but very much shorter. Or in more backward birds the immature browns and buffs may dominate. The direction of advance is invariably from the outer rectrices inward, following the succession of moult.

Bill greenish horn, darker toward the base; facial skin pale bluish; legs and feet dark greenish or slaty black. Length, about 700 mm.; bill from nostril, 15; wing, 195; tail, 400; tarsus, 80; middle toe and claw, 65 mm. Spurs triangular and flat, sometimes sharp, about 5 mm. in length.

EARLY HISTORY

Mr. Benjamin Leadbeater described and figured the Amherst Pheasant in the "Transactions of the Linnaean Society" for 1828, giving at the same time the following quaint account:

"The return of His Excellency the Right Honourable Earl Amherst from India has made us acquainted with one of the most splendid examples of the genus *Phasianus* that has been submitted to the notice of ornithologists for many years past.

"Two males of this new and beautiful species came originally from the mountains of Cochin China, and were presented by the King of Ava to Sir Archibald Campbell, who gave them to the Countess Amherst. Her ladyship retained them in her possession about two years, and ultimately succeeded in bringing them both to England alive, but they only survived the voyage a few weeks.

"I propose the name of *Phasianus Amherstiae* (tab. 15) for this valuable addition to our catalogue, as a tribute due to the distinguished lady to whom ornithologists are indebted for the knowledge of this new species; and I have great pleasure in publicly recording my thanks to her ladyship for the kindness and condescension with which my request to be allowed to make this bird known to the world through the medium of the Linnaean Society was immediately granted.

"It may be proper to state that the splendid appearance these specimens now exhibit in this country is entirely owing to the very judicious plan of taking off their extraordinary tail-feathers about two inches from the body of the birds, before consigning them to the coops in which they were conveyed from India."

SYNONYMY

Phasianus amherstiae Leadb. Tr. Linn. Soc., XVI. 1828, p. 129, pl. 15; Gray, in Griff. ed. Cuv. III. 1829, p. 25; Lesson, Traité d'Orn. 1831, p. 496; Blyth, Cat. Mus. As. Soc. 1849, p. 246.

Phasianus amherstia Temminck, Pl. Col. V. Phas. 1830, p. 11; Jard, Nat. Lib. Orn., IV. 1834, p. 210.

Thaumalea amherstiae Wagler, Isis, 1832, p. 1228; Gray, List of B. Pt. III. Gall. 1844, p. 24; id. Gen. B., III. 1845, p. 497, pl. cxxv; id. Cat. Hodgs. ed. I. 1846, p. 124; Sclater, List of Phas. 1863, p. 5, pl. 3; Swinhoe, Proc. Zool. Soc. 1863, p. 307; Gould, B. Asia, VII. 1866, pl. 20; Anderson, Proc. Zool. Soc. 1869, pp. 111, 278 (Western Yunnan); Sclater, Proc. Zool. Soc. 1869, p. 468; Sclater, Proc. Zool. Soc. 1870, pp. 128, 670 [Yun-ling

Mts., W. Szechuen]; id. Ibis, 1870, p. 297 [Ta-tsien-lou]; Swinhoe, Proc. Zool. Soc. 1870, p. 111; Carreau, Bull. Soc. d'Acclim. ser. 2, VII., 1870, p. 502; David, N. Arch. Mus. Bull., VII. 1871, p. 11 [Moupin]; Elliot, Monog. Phas., II. 1872, p. xx, pl. xiv. [text]; Sclater, Ibis, 1874, p. 169; David and Oustalet, Ois. Chine, 1877, p. 415, pl. 103 [W. Szechuen, Yunnan, Quei-chow, E. Thibet]; Anderson, Anat. and Zool. Researches, I. 1878, p. 671 [Yunnan Frontier Hills]; Seebohm, Ibis, 1891, p. 380 [W. Szechuen]; Tegetmeier, Pheasants, 1904, p. 215; Flower, Bird Notes, N. S. I. 1910, p. 54 [longevity; ♀ assuming ♂ plumage]; Mitchell, Proc. Zool. Soc. 1911, p. 521 [longevity].

Epomia amherstii Hodgson, in Gray's Zool. Misc. 1844, p. 85.

Chrysolophus amherstiae Gray, List Gallinae Brit. Mus. 1867, p. 30; id. Hand-list Birds, II. 1870, p. 258; Swinhoe, Proc. Zool. Soc. 1871, p. 398; Grant, Cat. Game-birds Brit. Mus., XXII. 1893, p. 342; Grant, Hand-book Game-birds, II. 1897, p. 46; Seth-Smith, Avicultural Magazine, IV. 1898, p. 142; Sharpe, Hand-list Birds, I. 1899, p. 38; Oates, Manual Game-birds India, II. 1899, p. 497 [Burmo-Chinese frontier]; Nehrkorn, Katalog der Eiersammlung, 1899, p. 194; Grant, Ibis, 1900, p. 606 [Ching-tung, Yunnan]; Hartert, Bull. Brit. Orn. Club, X. 1900, p. 83 (♀ in ♂ plumage); Davies, Ibis, 1901, p. 408 [W. Yunnan and Kweichow]; Oates, Cat. Birds' Eggs Brit. Mus., I. 1901, p. 59, pl. vi., fig.; Rothschild, Bull. Brit. Orn. Club, XIV. 1904, p. 59; Finn, Avicultural Magazine, N. S. III. 1905, p. 102; Comber, Journal Bombay Nat. Hist. Soc., XVI. 1905, pp. 512, 753 [Myitkyina District, Burma]; Heinroth, Der Zoologischer Garten, XLIX. 1908, p. 21 [length of incubation]; Harington, Journal Bombay Nat. Hist. Soc., XIX. 1909, p. 309 [? Bhamo district, Burma]; Harington, Birds of Burma, 1909, p. 119 [Myitkyina and Bhamo]; Finn, Game-birds India and Asia, 1911, p. 49; Thayer and Bangs, Mem. Mus. Comp. Zool. Harvard, XL. No. 4, 1912, p. 143 (Washan and Wuyaling, Western Szechwan, 8,000 feet).

Thaumalea amhersti Thomas, Proc. Zool. Soc., 1911, p. 6.

Order GALLIFORMES

Family PHASIANIDAE

Subfamily ARGUSIANINAE

THE character upon which I base this subfamily is the moult of the tail-feathers. In all the wild birds in moult which I have examined the sequence is from the third from the central pair, simultaneously outward and inward. The tail-feathers number from twelve to twenty-four.

The plumage in general is grey, brown and black, with rarely metallic patches. Ocelli are always present, more highly developed in the male, and occurring on the wings, tail, or body, or on all these areas. The side of the face is often bare, and usually of a reddish colour. Secondary sexual characters, aside from pattern and colour, may take the form of multiple spurs, a crest, or these may be absent; or the secondaries and central tail-feathers may be enormously lengthened. The contour plumage is soft and lax. The courtship is frontal, and the usual number of eggs is two.

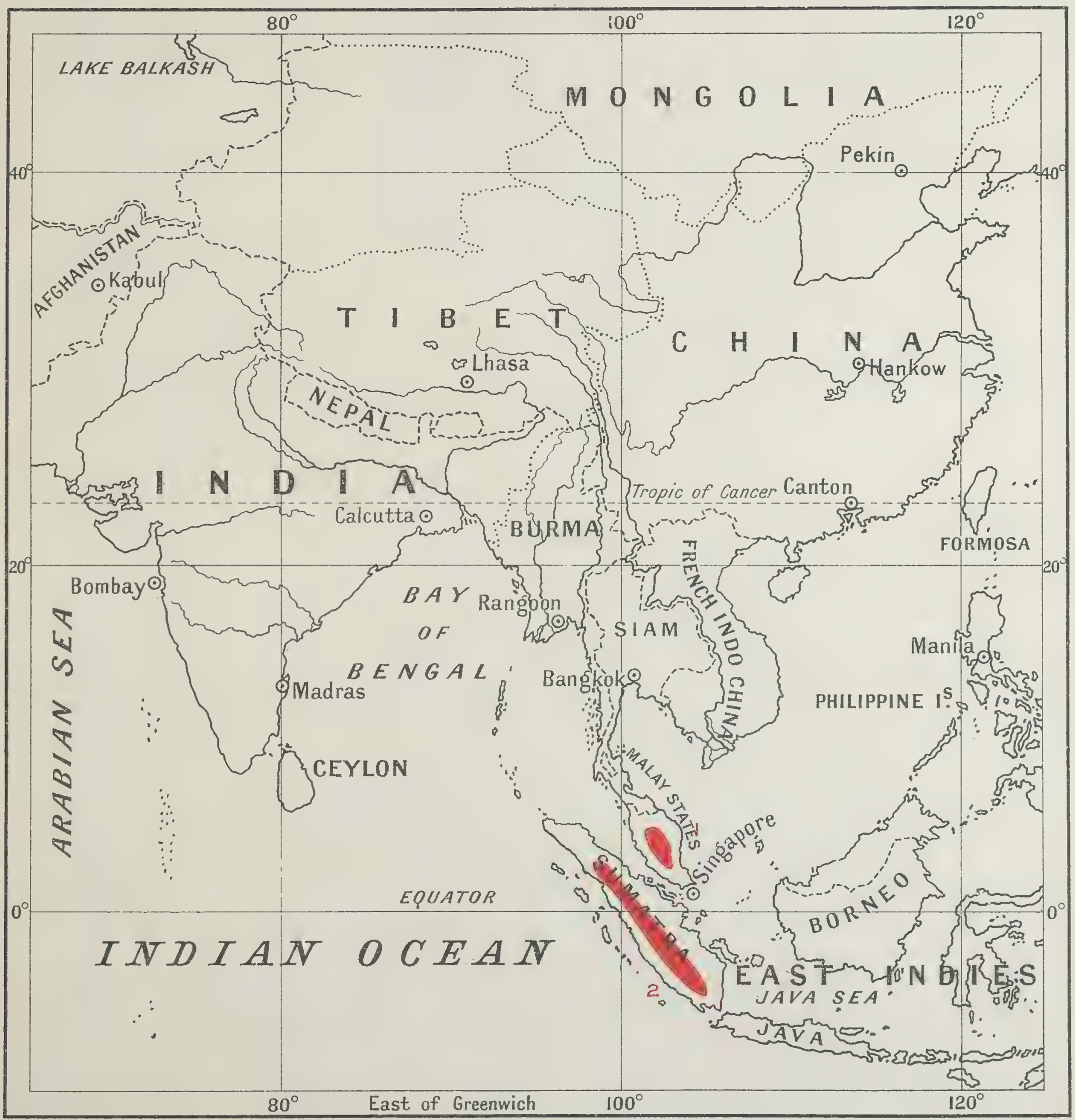
KEY TO GENERA

I. Rectrices with ocelli or eye-like spots.	
a Central rectrices pointed and slightly elongated	*Chalcurus*
b Central rectrices rounded and short	*Polyplectron*
II. Rectrices without ocelli or eye-like spots.	
a Secondaries shorter than the primaries	*Rheinardius*
b Secondaries longer than the primaries	*Argusianus*

CHALCURUS

BRONZE-TAILED PEACOCK PHEASANTS

MAP XVI.


80°
100°
120°
LAKE BALKASH
MONGOLIA
Pekin
40°
AFGHANISTAN
Kabul
TIBET
CHINA
Lhasa
Hankow
NEPAL
INDIA
Tropic of Cancer
Canton
Calcutta
BURMA
FORMOSA
20°
Bombay
BAY OF BENGAL
Rangoon
SIAM
FRENCH INDO CHINA
Manila
ARABIAN SEA
Madras
Bangkok
PHILIPPINE I^S.
CEYLON
MALAY STATES
Singapore
1
SUMATRA
BORNEO
EQUATOR
0°
INDIAN OCEAN
EAST INDIES
2
JAVA SEA
JAVA
East of Greenwich

H. F. & G. Witherby, Publishers.

Stanford's Geograph! Estab!

MAP SHOWING THE DISTRIBUTION OF THE BRONZE-TAILED PEACOCK PHEASANTS.

Region 1. Chalcurus inopinatus
Region 2. Chalcurus chalcurus

CHALCURUS

BRONZE-TAILED PEACOCK PHEASANTS

Order GALLIFORMES

Family PHASIANIDAE

Subfamily ARGUSIANINAE

Genus *CHALCURUS*

THE Bronze-tailed Peacock Pheasants form a small group of two species, resembling the true Peacock Pheasants, but decidedly less specialized both in pattern and colour. In this they bear direct comparison with *Rheinardius* in its relationship to *Argusianus.*

The birds are rare, both in their wild haunts and in museums; they have never been kept in captivity, and almost nothing was known about their habits and nesting until my brief opportunity for observation. In tail moult and number of eggs, these birds agree with the remaining three genera of *Argusianinae.*

The plumage is grey, brown and cinnamon, with almost all the feathers flecked with a light spot, which on the dorsal plumage develops into a semi-ocellus. The tail is sharply graduated, wedge-shaped, the central rectrices nearly three times as long as the outer pair. The terminal portion of the rectrices is glossed with metallic green, which tends to become concentrated into a large, eye-like spot. The face is almost wholly feathered. The spurs are usually multiple in the males, at least on one leg. The first primary is much shorter than the second, which, in turn, is shorter than the tenth; the sixth is slightly the longest.

The females differ in being decidedly smaller, in possessing less conspicuous and perfect ocelli, and in lacking spurs.

Judging by the change in colour and pattern in *Chalcurus* from chick to adult, *Polyplectron* presents a decided advance in evolution over the adult *Chalcurus.*

Chalcurus (Malayan birds)	*Polyplectron* (Malayan birds)
No crest or cephalic iridescence.	A long iridescent crest.
Increase of white, ontogenetically.	Great increase of white only on head and neck.
Immature dark colours changing to somatic rufous; rufous of tail bleaching to buff.	Elimination of rufous and the bleaching (indicated in *Chalcurus* tail) of the whole body plumage.
Slight increase in size and complexity of ocelli from chick to adult.	Ocelli on body and wing very large and perfect.
Central rectrices wholly or very slightly ocellied.	Fully developed ocelli on middle rectrices.
Ventral dark monocrome plumage of chick changing to adult mottling.	Under-parts pale and much mottled.
Very small bare facial area in adult; none in chick.	Large bare facial area.
Male and female very similar.	Male and female very unlike.

CHALCURUS

	Type
Chalcurus, Bonaparte, Ann. Sci. Nat. (4) I. 1854, p. 146	*C. chalcurus*

Chalcurus is confined to the mountain ranges in the centre of the Malay States and Sumatra.

There are only two species known:

Malay Bronze-tailed Peacock Pheasant	*Chalcurus inopinatus* Rothsch.
Sumatra Bronze-tailed Peacock Pheasant	*Chalcurus chalcurus* Lesson

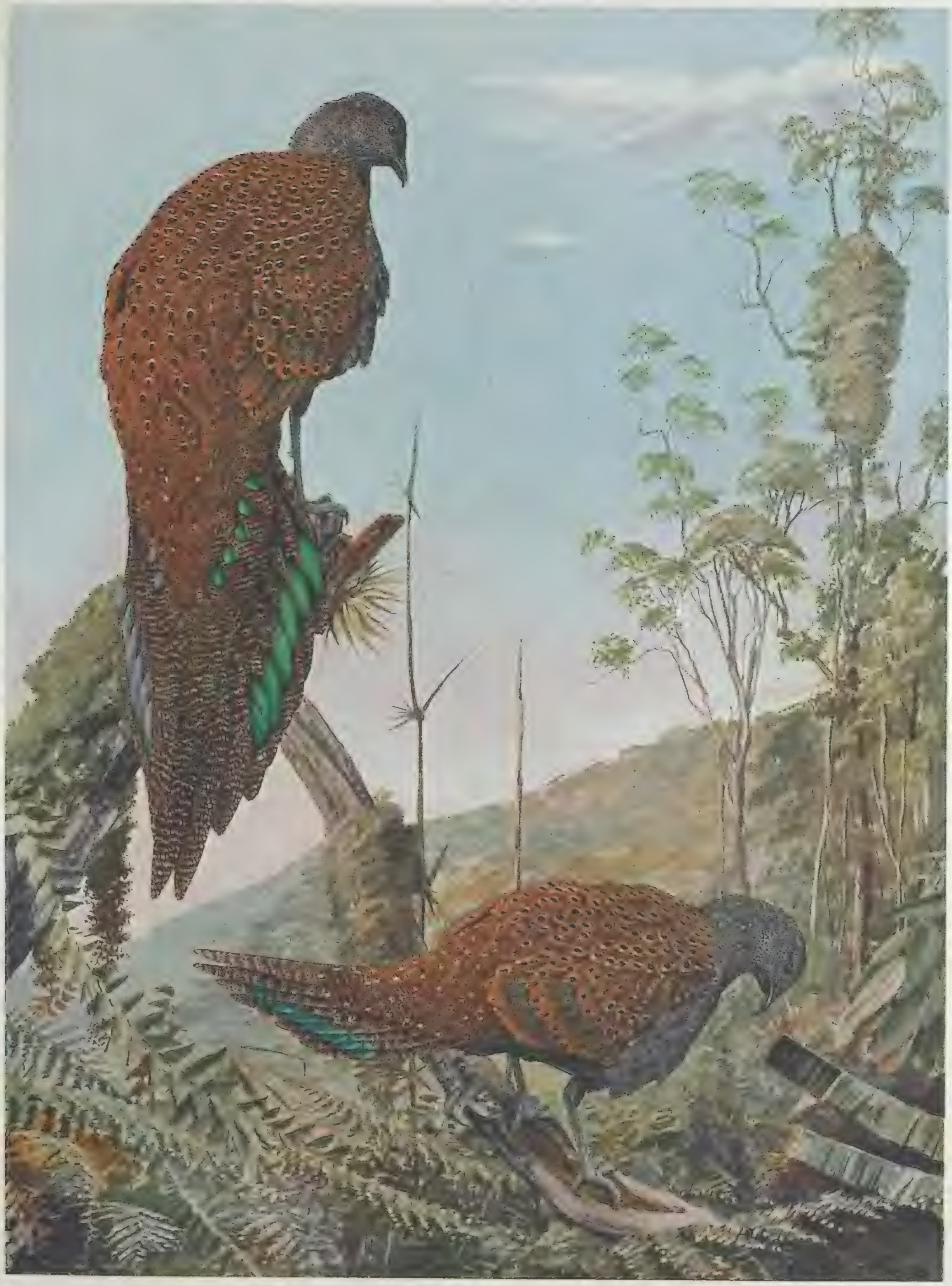
KEY TO THE FORMS OF *CHALCURUS*

I. Two to five spurs present; wing 180 mm. or over (males)
  a Head and neck grey . . . . *inopinatus*
  b Head and neck dark brownish black . . . . *chalcurus*
II. Spurs absent; wing less than 160 mm. (females)
  a Head and neck grey . . . . *inopinatus*
  b Head and neck dark brownish grey . . . . *chalcurus*

MALAY BRONZE-TAILED PEACOCK PHEASANT

Chalcurus inopinatus Rothschild

These pheasants creep through the dense jungles among the damp undergrowth, or fly up to the highest, isolated dead trees, from which they watch the sun setting across the wilderness of Malay mountains.



MALAY BRONZE-TAILED PEACOCK PHEASANT.

MALAY BRONZE-TAILED PEACOCK PHEASANT

Chalcurus inopinatus Rothschild

NAMES.—Generic: *Chalcurus*, Greek, *καλκός*, copper; *οὐρά*, tail, copper-tailed. Specific: *inopinatus*, Latin, unexpected. English: Malay Bronze-tailed Peacock Pheasant; Mirror Pheasant; Malay Mountain Pheasant; Native: as it lives only in the mountains, this bird is not known by name to the Malays of the lowlands.

TYPE.—Locality: Ulu Pahang. Describer: Lord Rothschild. Place of Description: Bull. Brit. Orn. Club, XIII. 1903, p. 41. Location of type: Tring Museum.

BRIEF DESCRIPTION.—Male: Head and neck dark grey, flecked above and spotted on throat with white. Above chestnut, with numerous, small, violet ocelli each with a proximal buff spot. Below black, faintly mottled. Tail black, spotted with rufous buff. Usually no ocelli on central tail-feathers. Twin, green, indefinite ocelli on the lateral coverts and rectrices, the one on the outer web twice as large as the inner one. Female: Smaller but similar to the male, except that the ocelli on the body and wings are smaller and quite or nearly devoid of iridescence.

RANGE.—Central mountains of the Malay Peninsula in Selangor and Pahang.

THE BIRD IN ITS HAUNTS

ON the Pahang side of the divide, marked by the backbone mountain chain of the Malay Peninsula, I saw my first Bronze-tailed Pheasants. Late one afternoon I reached a steep landslip which, a few months before, had carried away a wide swath of jungle, leaving the disintegrated rock exposed, or decorated with the new-sprouted plumes of yellow-green bamboo. I had had a long, tiresome tramp and was two miles from camp across a deep, dark valley. At the edge of a small open glade, sheltered by dense bamboos and close to the crest of a sharp ridge, I waited for an hour or longer; a lucky hour, as it proved. After removing the usual unpleasant collection of leeches, I sat quietly and watched the jungle life about me. A single tall tree leaned far out over the great earthen scar, its roots half exposed, soon to loosen and end its centuries of growth in an ignominious slide to the tangle far below.

From the topmost branches several bronzed drongos were fly-catching and uttering their loud, chattering song. A loud *whoof! whoof!* of wings sounded close overhead, and four heavy-pinioned hornbills—the bushy-headed—alighted awkwardly, each striking its hollow anvil in turn, the air fairly ringing with the deep metallic sound. Then one of the birds discovered me, and the four swept off again with long, outstretched necks and a roar of wings.

Ten minutes later a tupaia tree shrew ran out along a dead bamboo stem and began to pull off the sheaths, poking his sharp nose under them, presumably after insects. A second appeared, and thereupon ensued a fight of the fiercest character. At first it was a pursuit, the two flying along bamboos, up tree-trunks and even leaping three feet or more through the air. But at last they both closed on a branch and the fur flew from the mass of twisting limbs and bodies. Then over they went, separated in mid air and each stretched out his four legs to the fullest extent. Close to me they dropped, both landing on the great fronds of a tree-fern. They caught hold, rested panting a moment, and then vanished.

Hardly had they gone when a distant movement caught my eye and I looked intently along the ridge. There, in full view, were three Bronze-tailed Pheasants, apparently looking at me, although a screen of bamboo leaves intervened. I soon saw that the sudden fall of the tupaias was what had attracted their attention. As I watched breathlessly, a fourth, and then a fifth bird appeared. I could not distinguish the sexes, but three were adult and two half-grown young birds.

They remained in sight about four minutes. One of the old birds never stirred from the spot on which I first saw him; head raised, alertly turning now this way, now that; tail closed and lowered, but clear of the ground. The others moved about, stepping daintily and high. Two scratched for a while in the rain-washed gravel, one of them soon turning its attention to a clump of yellow flowers, picking the blossoms both from the stems and from where they lay fallen, and swallowing them.

One of the adult birds in the course of its walk stepped into a spot of full sunlight —the last which penetrated through the foliage from the setting sun—and for a moment stretched out every feather. The body and head plumage was fluffed up, the tail spread and slanted, the right wing raised, the left lowered. This position was held only for a few moments, and I could not appreciate the beauties thus displayed, as the bird's under-parts were toward me. It was most interesting as being the beginning courtship attitude of the true *Polyplectrons*, and very probably of this species. In this case, however, the action was merely a lazy stretching in response to the warmth of the sun; an unconscious homage to the source of all life and warmth. After preening for a short time, this bird uttered a low chuckling *chack—chack—chack—chack—chack!* and walked slowly into a fern tangle which bordered the jungle on the opposite slope. The remaining four soon followed, going in at different points, but all headed in the same direction. I hastened to the crest of the ridge, but neither saw nor heard anything more of the birds, though I could look far down into the damp, dark depths of the ravine, through a maze of bamboo columns and the feathery tops of tree-ferns.

From a distance came the base and treble of the wa-was, rising in wild, rollicking cadence. A fraying end of cloud mist drifted past, warning me that a storm was brewing, and the shrill metallic ring of the "six o'clock bees" marked the approach of dusk.

I knew that the wild creatures of the night were waking all about me, from the tiny mouse which would soon start on its timid quest for food, to the black leopard the roar of which I had heard the night before and whose fresh track I would pass on the way to camp. Once I was startled by a sudden rush and squeak, but it was only a spiny-haired rat fleeing from some unknown danger. The darkness settled down as I reached my hammock, seeming to emphasize the many spicy jungle odours, and ushering in a wind which rattled the bamboos and shook every loosened leaf to the ground.

GENERAL DISTRIBUTION

The Malay Bronze-tailed Pheasant, although living in the Malay Peninsula, yet hardly comes into contact with the true *Polyplectron*. The latter is found in the lower coastal levels, while the other is a true mountain bird. It may be looked for in humid, dark ravines above three thousand feet.

I have found it not uncommon in the mountains about Semangko Pass, especially to the eastward on the Pahang side of the divide. In Selangor it has been recorded on Gunong Mengkuang Lebah, from four to five thousand eight hundred feet, and Gunong Ulu Kali. In Pahang it has been found at Ulu Dong, and at three thousand feet on Gunong Tahan, although rare in the last vicinity. How much farther to the north and south this species extends we do not know, probably farther in the latter direction, toward the range of its congener in Sumatra.

GENERAL ACCOUNT

As the Malay Bronze-tail was the only member of this group of pheasants which I expected to be able to study, and as our only information concerning it thus far had come from dried skins, I was very anxious to find and observe it in life. But many days passed after I reached its haunts before I was able to catch even the glimpse of it which I have narrated.

I made Semangko Pass my base of exploration, that gap over which the trail leads, from Selangor into Pahang, at about twenty-seven hundred feet elevation. I climbed the ascending peaks to a height of almost forty-five hundred feet, creeping laboriously through bamboo tangles, or holding on to long liana guy ropes, along steep, pathless banks. Then I crossed over to the Pahang side and worked northward along the range. The going was fearfully rough, sometimes confining a day's tramp to three or four miles. Here, however, as I have detailed, I at last found the birds.

The day which followed my encounter with the flock of five was rainy, cloud after cloud passing over and loosing its tropical downpour, but I crept up the sandy bed of the tumbling creek, through the ravine from which, yesterday, the pheasants had come. I saw but one bird and secured it, a male in unmoulted, rather worn plumage. It must have been feeding at daybreak, so well filled was the crop. It had devoured a motley assortment of the small folk who dwell in rotten logs: spiders, white ants, several grubs and two weirdly strange, flat creatures, looking like the trilobites of Devonian times, and even more of a puzzle. For although they have been kept alive for months, it is yet not known whether they are insect or crustacean. Robinson says that this pheasant feeds on insects, millipedes and the fruit of a creeping rotan.

On another later trip in this same region an old Malay hunter, on seeing a painting of the Bronze-tailed Pheasant, said he had shot many, and knew where one had nested a few months before. After much persuasion he led me to the spot—a long, arduous tramp through difficult bamboo jungle. At an elevation of about thirty-two hundred feet we entered a rocky defile, and half-way up the opposite slope he pointed at the spot, well marked by two great trees which had fallen parallel to one another. Close to the hollow made by the great roots tearing out, the Malay said he had shot the bird on her nest and eaten her. He said there were two white eggs, one of which was broken by the shot, the other he ate. There was, of course, no visible nest hollow, and the low growth of variegated leaves was unbroken. He had been resting on a large branch waiting for game when the bird walked into sight and settled down upon her eggs.

I gathered up the mould from this place in my handkerchief and later examined it carefully. Six pieces of whitish eggshell were present, quite distinguishable from several broken land shells. So the evidence of the native seems trustworthy, whose story, indeed, was told and retold in so straightforward a manner that there seemed no reason to doubt it, especially as the number of eggs corresponded to the general habits of the better known relations of this pheasant. He knew of the dancing place of the argus, of its nocturnal calling, and the habits of many other jungle creatures, and his story of this nest is at least worthy of record. As chicks half in down, half in the juvenile plumage, have been obtained near Semangko Pass in the latter half of February, we can be reasonably certain that late January is the breeding season.

We may consider the Bronze-tail Pheasant as the highest ranging member of its family in this region. In this respect it is the blood pheasant of the Malay Peninsula.

Its chosen haunts are the humid, dark ravines of the medium and higher mountains, being apparently more abundant on the east or north-east slopes. They choose always to run rather than fly, and, like so many pheasants, seem to feed in one particular zone and roost in another. We know nothing of their roosting-place, but presumably it is on the branches of some tree free from vines and parasites, as in the case of its congeners, the peacock pheasants. The deadly musangs or civet cats, which must ever menace the life of these birds, would make a ground roost fatal.

It is a true wilderness pheasant, seldom found near villages, although I know of one young bird being trapped close to a house.

Like most jungle pheasants, I never knew it to take to wing, but whether frightened or making its way at its own pace, it always chooses to walk or run. I twice saw birds perched on the bare dead limbs of tall trees, apparently sunning themselves, in this respect bringing to mind the peafowl.

The haunts of the Bronze-tailed Pheasant touch the extremes of sunlight and shadow. Near the stream-beds, in the depth of the ravines, all is dark and sunless; inches of rotting leaves distill spicy odours, and coolness reigns. On the sunlit ridge warmth and brilliance pervade all things. The sides of the upper slopes of the ravines are the most favoured spots, and here we often find evidences of the feeding-places—deep holes scratched in the mould, or in logs half returned to earth. Here the delicate selaginella trails its fleecy strands of maiden's hair over the rocks, and other graceful tropical mosses reveal every damp spot.

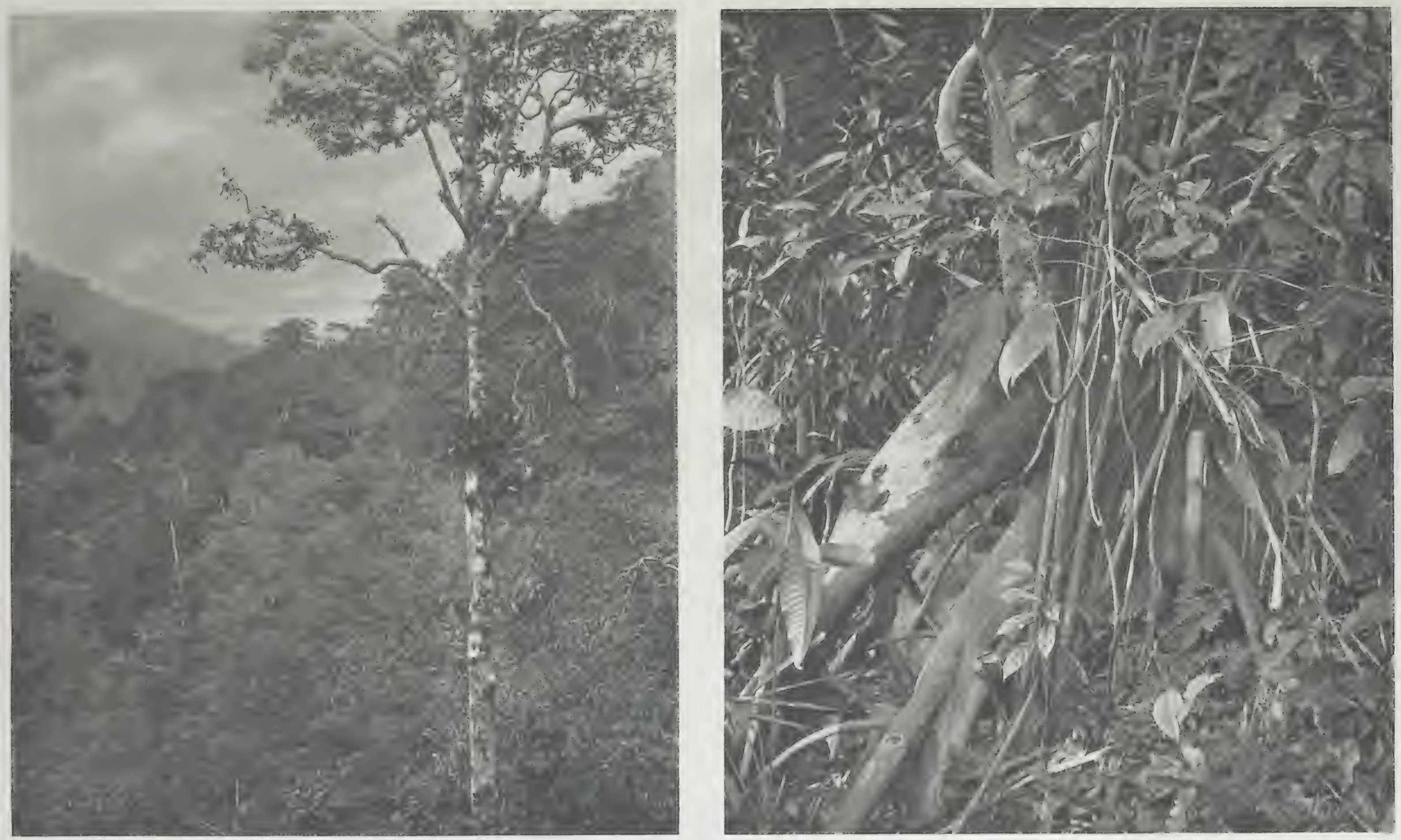
Here, if anywhere in the jungle, we shall find blossoms—the long, sweeping trumpets—golden and azure blue. The leaves of both are hardly to be outdone in beauty by the flowers. One plant has leaves of delicate green, ribbed with shining silver, and coated with a sheen of the same colour; while in another the long, pointed leaves are thick and furry, of darkest green, centred with a stripe of pale whitish green. And the under-side is of richest wine colour. Sometimes the sweetest of odours fills the air, and beneath moss and fern we shall find white violet-like blossoms, their three-parted lower lips gay with lines of lilac and yellow.

Amid such royal patterns as these, etched on the vegetation of the steep slopes, lives this beautiful pheasant. Spending so much of its life amid the shadows of the jungle floor, and bathed day after day in grey mists and cloud, its plumage seems to have assumed the sombreness of its haunts. But as even in these dark ravines we find the

HAUNTS AND NESTING-PLACE OF THE MALAY BRONZE-TAILED PEACOCK PHEASANT

THE home of these birds touches the extremes of sunlight and shadow, from the stream-beds in the depths of the ravines, where all is dark and sunless, to the sunlit ridges where warmth and brilliance pervade all things. Here among golden and azure blossoms the Bronze-tails live.

At an elevation of thirty-two hundred feet in the mountains of Pahang, near a rocky defile, half-way up a steep slope, was the spot where a Bronze-tailed Peacock Pheasant had made its nest. Only broken eggshells remained, half sunken into the moss and leaves between two great fallen trees.



HAUNTS AND NESTING PLACE OF THE MALAYAN BRONZE-TAILED PEACOCK-PHEASANT

gay little flower faces, calling to the passing bees with colour and perfume for help in perpetuating their kind, so in the dull plumage of the bird we know there are hidden many jewels of colour—mirrors, *chermin*, as the Malays poetically call them—which in due season will be flashed forth to help in some potent way in the winning of a mate; like the hue of the flowers, an aid in the continuance of its race.

DETAILED DESCRIPTION

ADULT MALE.—Forehead and crown dark grey with a narrow shaft-streak. On the lores, nape, side and hind neck, the white becomes a sub-terminal spot, increasing in size and extent on the anterior side neck and around to the feathers of the face, chin and throat, which are white with broad dark margins. The under-surface is a continuation of the cephalic dark grey, which becomes black with very faint buffy vermiculations. On the lower hind neck the whitish shaft-spot persists and the disintegration of the feathers gives a grizzled effect to what otherwise would be a rather pronounced grey vermiculation on black. The visible portion of the remaining dorsal plumage becomes rich chestnut, vermiculated with black. Each feather has a round sub-terminal black ocellus with violet-blue centre, set in a small solid chestnut zone, and flanked basally by a conspicuous shaft-spot of pale buff. The basal portion of the feather pales into a grey background with very strong and coarse black vermiculation. In full-plumaged males the ocelli persist strongly developed to the very rump. In younger birds they die out on the mid-back, a second good-sized buff spot appearing at the distal pole of the decreasing ocellus, while on the rump this spot, in a tiny black area, is all that remains to break the coarse mottling of chestnut and black.

The wing-coverts and inner secondaries differ in no way from the mantle, the ocelli disappearing abruptly on the eighth secondary. The remaining outer secondaries are brownish black with diminishing rufous or buff mottling on the outer webs. The primaries are quite plain brownish black.

The tail-feathers are twenty in number, not sixteen, as has been usually supposed. Both the upper tail-coverts and rectrices are black, thickly covered with rather angular dots, chestnut on the former, buffy on the central and whitish on the lateral rectrices, where also they are much more round and regular.

Taking the longest row of coverts, the central pair are quite plain, the 2nd pair bear two large, equal, well-separated ocelli, while on the next five lateral pairs the two eye-spots are merged along the shaft for most of their length, and the outer is somewhat the larger.

The central pair of rectrices in fully adult birds may be wholly unornamented, or each feather may have an ocellus on the outer web. This may be an incipient, oval patch of black pigment, or the ocellus may be fully developed and iridescent, an inch and a half in length in the centre of the web. Or such an ocellus may be developed on one feather and the other be wholly without a trace. Whatever the condition of the ocelli on the central rectrices, these ornaments are always present on the lateral feathers, although they are of greater extent when the central pair of feathers shows one or both, while on the other hand very rarely they are absent from the 2nd pair as well as the central.

On the lateral feathers the ocelli are double, and on all after the 2nd pair the twin ocelli merge along the shaft. The outer ocellus is very much the larger, and it increases regularly as we proceed outward. On the 3rd pair the outer ocellus is only one and a half times as large as the inner, while on the outer rectrices it is two and a half times as large.

The ocelli on the more central pairs of coverts and rectrices are glistening green in all lights; the lateral ones of both series show an intense blue when viewed toward the light, changing to green away from the point of illumination.

The tail-moult appears to agree with *Polyplectron* and *Argusianus*, proceeding outward from the 3rd from the inner pair.

Irides hazel; bill bluish horn, paler at the tip; legs and feet dark grey. Bill from nostril, 12 mm.; wing, 210; tail, 320 to 380; tarsus, 73; middle toe and claw, 54 mm. The majority of specimens I have examined have had one spur on one leg and two on the other. A slightly less number had one on each leg, while I have seen only two with two on each leg. These spurs are quite straight, sharp, and average 10 mm. in length.

Adult Female.—Except in the development of the body and wing ocelli and in the much smaller general size, the female differs in no way from the male. In a fully adult female the ocelli are as large and numerous as in the male, but the violet iridescence of those on the body and wings is either wholly absent or visible only in certain lights as a faint gloss. The distal buff spot, though small, is always present.

The ocelli are wholly absent from the tail-coverts and the central rectrices, and they are somewhat less developed on the lateral feathers, although in relative size and position they correspond closely to those in the male, except that on the outer pair of feathers the ocellus on the inner web is absent.

There are eighteen tail-feathers.

Flesh colours as in the male. Bill from nostril, 11 mm.; wing, 180; tail, 215 to 255; tarsus, 58; middle toe and claw, 43 mm. Spurs absent.

Juvenile Plumage.—A chick collected on February 23, still partly in down, is in full moult. The bill is coloured as in the adult; dark, except for the terminal portion of both mandibles, which is pale horn colour.

The whole head and neck are still clad in natal down, except for the ear-coverts and a few small feathers on the anterior forehead, although feathers in the sheath are in evidence in many places. The whole crown and nape is of rufous down, barred with black. The few new feathers on the forehead are black with white centres. The ear-coverts are almost wholly black, and show as a conspicuous patch of dark colour on the side of the head. From the crown, backward over the face, the rufous colour is rather abruptly lost, and the down becomes a monochrome pale buff over the chin, throat and side neck, with as yet almost no signs of moult.

Abruptly on the lower neck the new body contour plumage appears; well-grown for the most part, although showing some sheathed feathers.

The entire under-parts differ from the adult in being more of a monochrome dark brown, with only a small amount of mottling, but showing plain hints of the vague, whitish, subterminal area. Beneath the plumage of the lower parts are traces of the pale grey or buffy down, showing that the throat colour was formerly continuous throughout the ventral surface.

The dorsal neck-feathers are greyish with distinct traces of rufous in the centre of the back. The spots are few and faint; the largest in the scapular area.

The wings are much as in the adult, except for intensity of colour and pattern. One marked exception is the pronounced terminal buff spot on all but the tertials; strongest on the inner secondaries and gradually dying out in faint mottlings on the middle primaries. The greater wing-coverts show this terminal spot much larger than in the adult, forming a narrow buff band across the wing. The rectrices are irregularly mottled, with more or less distinct bars of rufous as in the female. All are in full active growth. The remiges are in full moult, the primaries proceeding in an outward direction, as the outer four still show blood sheaths. In a somewhat older individual the last trace of natal down externally visible is a median line down the throat.

FIRST YEAR MALE PLUMAGE.—In comparison with a fully adult male we find the neck above almost devoid of the subterminal white spots, which in the adult are continued from the head over the whole lower neck and upper mantle. The dorsal spots are few and lack all metallic colour, and the whole upper plumage is darker and less clear rich chestnut.

Tail dark, and mottled irregularly and faintly with reddish, dull chestnut. At first glance there seems no trace of the bronze mirrors, but on closer examination one detects faint indications of metallic colouring on the two outer pairs of tail-feathers. The under parts are only very faintly mottled—almost uniform dark brownish black.

Thus in the adult, as compared with the juvenile, we find: an increase in the size of the bird in general, and in the area on the plumage, of the white spots on the head and neck; a clearing of the various hues of the upper plumage, and a wholly new type of tail. The rufous colour leaves the rectrices and increases on the back and rump.

Length, 395 mm.; bill from nostril, 9; wing, 155; tail, 180; tarsus, 52; middle toe and claw, 41 mm. At this age there is no trace of spurs.

In one bird in first year plumage, where half the tail had been lost accidentally, the incoming feathers all show a single well-developed ocellus on the outer web, with no trace of an inner one. So the greater size of this eye-spot in the adult would seem to be an accurate gauge of its phylogenetic appearance.

SYNONYMY

Chalcurus inopinatus Rothschild, Bull. Brit. Orn. Club, XIII. 1903, p. 41 (Ulu Pahang); Rothschild, Novitates Zoologicae, X. 1903, pl. II.; Robinson, Jour. Fed. Malay States Mus. I. 1906, p. 130 (Ulu Dong and Gunong Tahan, Pahang; Gunong Mengkuang Lebah, Selangor); Robinson and Kloss, Jour. Fed. Malay States Mus. Singapore, 8, 1918, p. 103.

Polyplectron inopinatus Robinson, Jour. Fed. Malay States Mus. II. 1907, p. 67 (Malay Peninsula, south of Kra Isthmus); Robinson, idem. II. 1909, pp. 168, 219 (Mountains above Semangko Pass and Gunong Mengkuang Lebah and Ulu Kali); Grant and Robinson, Report on Gunong Tahan Expedition, Birds, p. 55 (Gunong Tahan and Mengkuang Lebah, Selangor).

SUMATRA BRONZE-TAILED PEACOCK PHEASANT

Chalcurus chalcurus (Lesson)

Names.—Specific: *chalcurus*, similar to the generic. English: Sumatra Bronze-tailed Peacock Pheasant. French: Éperonnier chaleure, ou Napoléon. Native: Karo-karo; Loekei.

Type.—Locality: Erroneously recorded "De Java." Describer: Lesson. Place of Description: Traité d'Orn., 1831, p. 487. Location of Type: Paris Museum.

Brief Description.—Male: General colour brown; above barred with dull rufous; throat and neck with shaft-spots; tail-feathers black, barred with rufous, the central ones shading into purplish blue toward the tip, while on the lateral feathers this metallic colouring occupies most of the outer and much of the inner webs. Female: Similar, but smaller, and without spurs.

Range.—The mountains of Sumatra.

GENERAL ACCOUNT

Lesson, in his "Traité d'Ornithologie" of 1831, called this bird *Polyplectrum chalcurum* or l'Éperonnier sans yeux, and confided to his reader that it was "Brun-roux rayé de brun. De Java." The individual bird which furnished this lucid information was in the Museum de Paris, and was the same one which Temminck, later in the same year, figured and called *Polyplectron chalcurum* or Éperonnier Chalcure. Temminck adds that M. Diard brought it from Sumatra. Jardine presents a most frightful copy of Temminck's plate, and adds nothing to our knowledge of the bird. In fact, to this day, we can boast of but little more information concerning this species.

The great island of Sumatra has been strangely neglected by zoologists and we know very little concerning its animal and bird life. This applies to the Sumatran Bronze-tailed Pheasant, although its close relationship to the Malayan bird unquestionably indicates a corresponding similarity of habits. Occasionally the bird approaches outlying native villages and is snared for food. From examination of several crops we know that it feeds upon small fruits and insects, but of its courtship and nesting habits we are still ignorant. As in the Malay Peninsula, the Sumatran birds of this group are mountain loving, and have been observed and collected at altitudes of about three thousand feet or over.

DETAILED DESCRIPTION

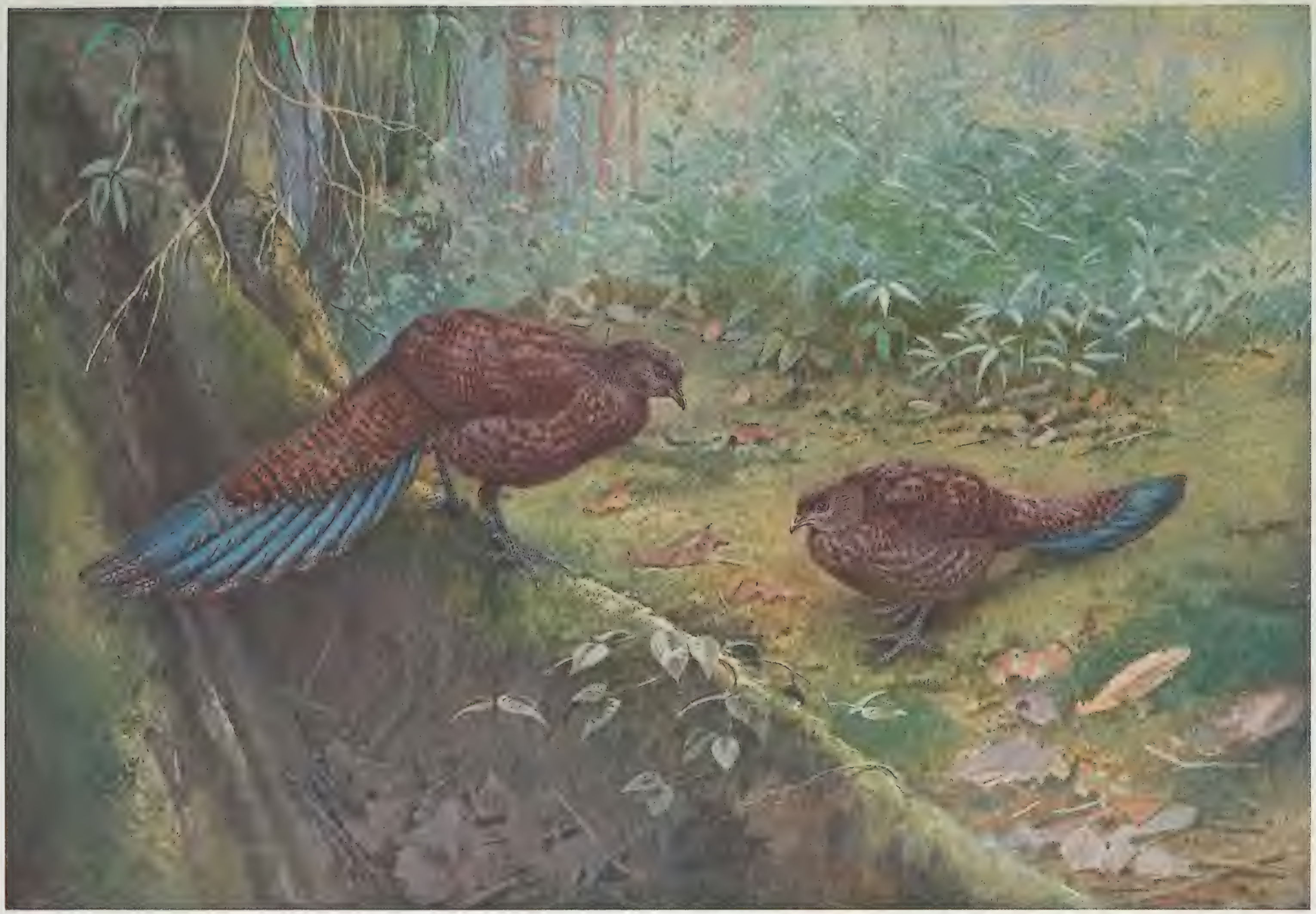
Adult Male.—Head and neck dark brownish black, with the face, chin and throat greyer, and the feathers of the latter with a small subterminal shaft-spot. Hind neck, upper mantle and entire under-parts very dark, glossy, chocolate brown, with faint, almost obsolete traces of dark cross-bars, and in favourable lights a distinct violet sheen. On the mantle one or two rather conspicuous, separate, buff shaft-spots appear, the distal one larger and set in a black area, but fairly concealed beneath the overlapping

SUMATRA BRONZE-TAILED PEACOCK PHEASANT

Chalcurus chalcurus (Lesson)

Living in the unknown hinterland of the mountains of Sumatra, almost nothing is known of the habits of this bird. No white man has ever seen it alive, and the few skins have been obtained from natives who have snared them as they came down near their villages in search of food.

PLATE LXXV.



SUMATRA BRONZE-TAILED PEACOCK PHEASANT.

plumage. Posteriorly, over the entire upper surface of the body, wings and tail, dark cross-bars develop, on the mid-back there being three or four, on the lesser coverts two, and on the longer six to nine. The ground colour over the same area changes to dull rufous brown.

On all the wing-coverts, and posteriorly as far as the rump, the buff and black ocelli are well developed on the concealed middle portions of the feathers.

On the secondaries the black increases until the rufous is reduced to a mottling on the outer webs, and disappears altogether on the primaries.

The tail-coverts are much like the back, with the rufous brown interspaces more broken into angular lines and spots, and without trace of ocelli. The tails of the birds I have examined are much damaged, but there seem to be sixteen tail-feathers. All have metallic markings, but with the indefiniteness of *inopinatus* carried still further. The metallic area is of much greater extent than in any other *Polyplectron* or *Chalcurus*, but is not set off distinctly from the rufous and black barring. It, however, occupies the area represented by the black cross-bars, and proximally is broken by several of the rufous bars running straight through the metallic area. The extremities of all the rectrices are black, spotted with rufous. The metallic area is least developed on the central rectrices, but on the lateral feathers occupies the greater part of the outer web and over half of the inner.

Toward the light it is brilliant violet, while away from the light it changes to shining green.

Irides dark sooty brown; legs and feet faded blue horn colour.

Bill from nostril, 10 mm.; wing, 183; tail, 240; tarsus, 65; middle toe and claw, 48 mm. One bird had five spurs, all others examined had two on each leg. Average length, 10 mm.

First Year Male Plumage.—This bird is similar to the adult, except that the shaft ocelli are scarcely developed and the black barring of the back and wings is more irregular and mottled, less clear-cut bars. The metallic colouring is, if anything, more highly developed, occupying more area than in the old males, extending almost or quite to the tip of the feathers.

Bill from nostril, 10 mm.; wing, 155; tail, 215; tarsus, 63; middle toe and claw, 45 mm.

Adult Female.—Very similar to the male, but smaller. The chin and throat are more decidedly marked with white, giving a distinct streaked appearance. The crown and face are also streaked, although less distinctly. The dorsal markings are much more irregular and are even less distinctly barred than in the young male, although the pattern of alternate bars of black and dark chestnut is everywhere discernible. The metallic colouring on the tail-feathers is similar to that in the male.

Bill from nostril, 10 mm.; wing, 152; tail, 188; tarsus, 53; middle toe and claw, 41 mm.

SYNONYMY

Polyplectrum chalcurum Lesson, Traité d'Orn. 1831, p. 487.

Polyplectron chalcurum Temminck, Pl. Col. V. 1831, pl. 19 (No. 519), (Sumatra); Jard., Nat. Lib. Orn. IV. 1834, p. 163, pl. VII.; Lesson, Comp. de Buff. VII. 1836, p. 322; Gray, List of B. Pt. III. Gall. 1844, p. 22; Gray, Gen. Birds, III. 1845, p. 495; Sclater, List Phas. 1863, p. 12; Gray, List Gall. Brit. Mus. 1867, p. 25; Gray, Hand-list Birds, II. 1870, p. 257; Elliot, Mon. Phas. I. 1872, pl. 10; Nicholson, Ibis, 1883, p. 255 (Forests near Hoedjoeng, Blalauw, 3000 feet, Sumatra); Büttikofer, N. Leyd. Mus. IX. 1887, p. 77. (Padang, W. Sumatra.)

Polyplectrum inocellatus Cuvier, " Paris Mus." (MS.); Lesson, Traité d'Orn. 1831, p. 487.

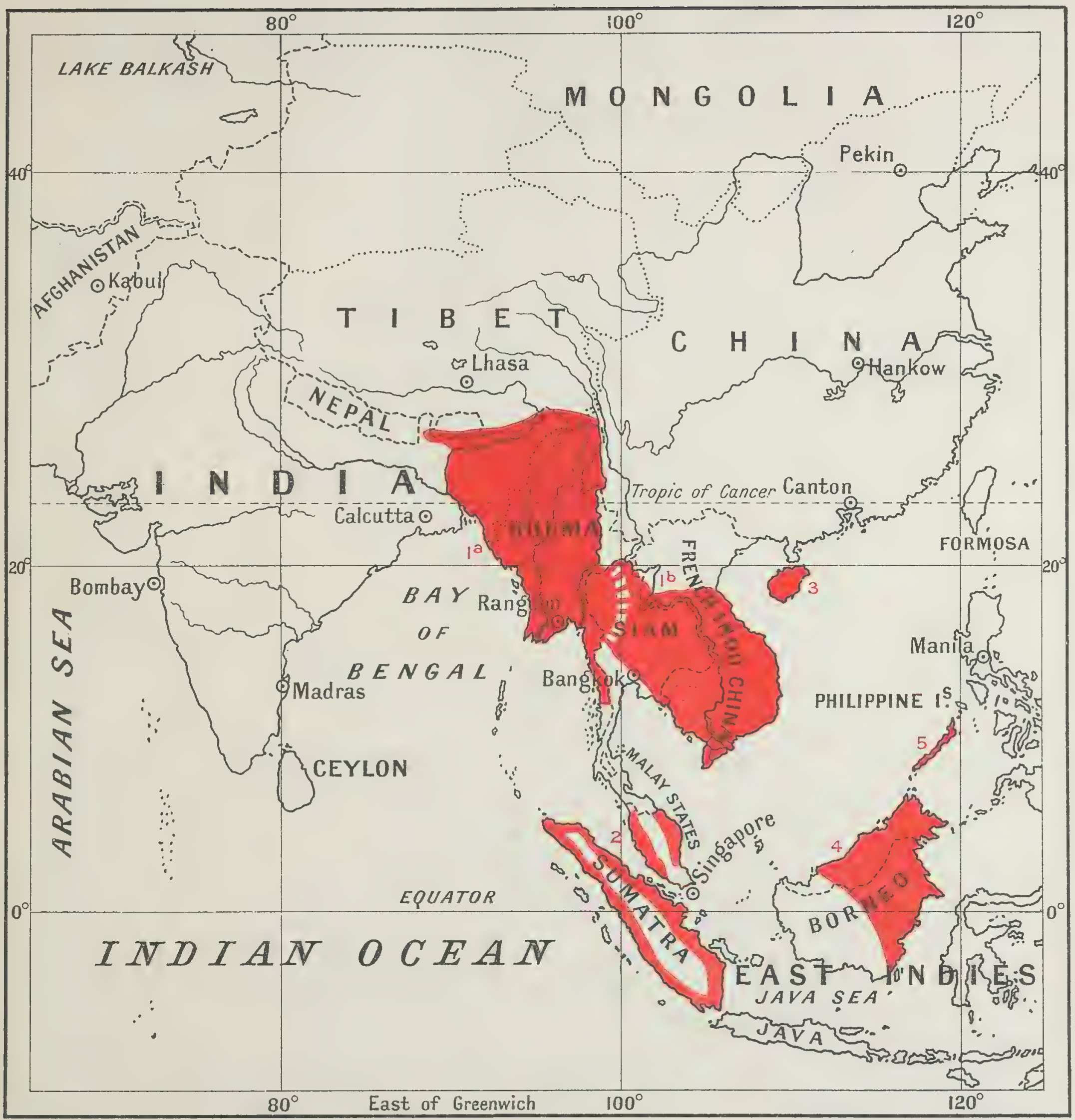
Chalcurus inocellatus Bonap., C. R. XLII. 1856, p. 878; Salvad., Ann. Mus. Civ. Gen. XIV. p. 248. (Mt. Singalan, W. Sumatra.)

Chalcurus chalcurus Grant, Cat. Birds, Brit. Mus. XXII. 1893, p. 361.

POLYPLECTRON

PEACOCK PHEASANTS

MAP XVII.


80°
100°
120°
LAKE BALKASH
MONGOLIA
Pekin
40°
AFGHANISTAN
Kabul
TIBET
CHINA
Lhasa
Hankow
NEPAL
INDIA
Tropic of Cancer
Canton
Calcutta
BURMA
1a
FORMOSA
20°
Bombay
BAY OF BENGAL
Rangoon
1b
FRENCH INDO CHINA
SIAM
3
Manila
Bangkok
Madras
PHILIPPINE Is.
ARABIAN SEA
CEYLON
5
MALAY STATES
Singapore
2
4
SUMATRA
EQUATOR
BORNEO
0°
INDIAN OCEAN
EAST INDIES
JAVA SEA
JAVA
80°
East of Greenwich
100°
120°

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MAP SHOWING THE DISTRIBUTION OF THE PEACOCK PHEASANTS.

Region	Ia.	Polyplectron	bicalcaratus bicalcaratus
,,	Ib.	,,	,, germaini
,,	2.	,,	malaccensis
,,	3.	,,	katsumatae
,,	4.	,,	schleiermacheri
,,	5.	,,	napoleonis

POLYPLECTRON

PEACOCK PHEASANTS

Order GALLIFORMES

Family PHASIANIDAE

Subfamily ARGUSIANINAE

Genus *POLYPLECTRON*

THE Peacock Pheasants are delicate, graceful birds, weighing less than two pounds, with no exaggerated characters of plumage, but ornamented with many beautiful, metallic, eyed spots, which are displayed by the male in courtship. The courtship is frontal. The eggs as a rule are two in number, although in the northern species four and five have been recorded.

The plumage is grey, brown or buff, usually speckled and vermiculated with lighter, while rarely solid metallic areas are present. The tail-feathers number from twenty to twenty-four, rounded and graduated. The ocelli occur on the rectrices, greater upper tail-coverts, secondaries, wing-coverts, scapulars and mantle. The facial skin when bare is usually reddish. The plumage is lax and soft, and the spurs multiple.

The females are smaller, duller in tone, and with the ocelli less developed than in their mates. They also lack spurs. Otherwise the sexes resemble each other.

POLYPLECTRON

Polyplectron, Temm. Pig. et Gall. II. 1813, p. 363	*P. chinquis*
Diplectron, Vieill. Analyse, 1816, p. 50	*P. chinquis*
Polyplectrum, Less. Traité d'Orn. 1831, p. 487	*P. chinquis*
Diplectrum, Agass. Index Universalis, 1846, p. 125	*P. chinquis*
Diplectropus, Gloger, Hand- u. Hilfsb., p. 382	*P. chinquis*
Emphania, Reichenb. Nat. Syst. Vog. 1852, p. XXIX	*P. napoleonis*

Peacock Pheasants inhabit Burma, Eastern Yunnan, Siam, Cochin China, Hainan, the Malay Peninsula, Sumatra, Borneo and Palawan. They are birds of the lowland forests and seldom range very far up the mountain slopes.

Five full species and one subspecies of *Polyplectron* are recognized in this monograph:

Grey Peacock Pheasant	*Polyplectron bicalcaratum bicalcaratum* (Linné).
Germain's Peacock Pheasant	*Polyplectron bicalcaratum germaini* Elliot.
Malay Peacock Pheasant	*Polyplectron malaccensis* (Scop).
Hainan Peacock Pheasant	*Polyplectron katsumatae* Rothschild.
Borneo Peacock Pheasant	*Polyplectron schleiermacheri* Brüggemann.
Palawan Peacock Pheasant	*Polyplectron napoleonis* Lesson.

KEY TO THE FORMS OF *POLYPLECTRON*

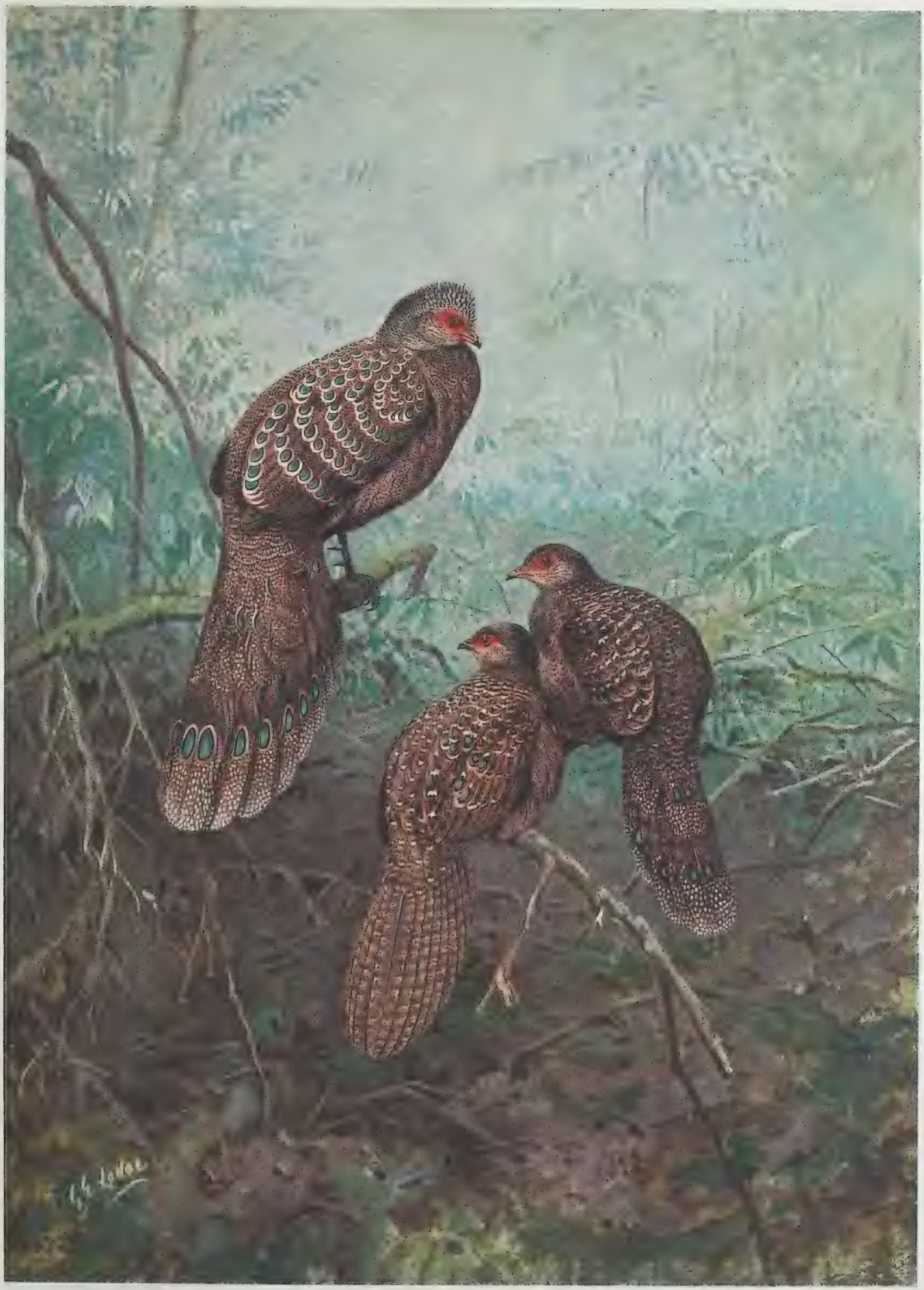
I. Mantle and wing-coverts with metallic tips or ocelli (males)
  a Ventral plumage brown, speckled with pale buff.
    a' Larger, with ocelli chiefly violet and purple.
      a'' Outer tail-feathers with ocelli on both webs.
        a^3 General colour mottled grey . . . . *bicalcaratum bicalcaratum.*
        b^3 General colour, dark blackish grey . . . . . . *bicalcaratum germaini.*
      b'' Outer tail-feathers without ocelli on the inner web . . *malaccensis.*
    b' Smaller, with ocelli chiefly greenish . . . . *katsumatae.*
  b Ventral plumage black, sometimes minutely dotted.
    c' Mantle and wings with distinct ocelli . . . . . *schleiermacheri.*
    d' Mantle and wings solid metallic blue and green . . . *napoleonis.*
II. Mantle and wing-coverts lacking, or with rudimentary, ocelli (females).
  a Outer tail-feathers with metallic ocelli on both webs.
    a' Larger, with lighter coloured plumage, elsewhere than Hainan.
      a'' Mantle and greater tail-coverts without metallic ocelli . . *bicalcaratum bicalcaratum.*
      b'' Mantle and greater tail-coverts with metallic ocelli . . *bicalcaratum germaini.*
    b' Smaller, with darker plumage, on Hainan only . . . . *katsumatae*
  b Outer tail-feathers with metallic ocelli only on outer web.
    c' Greater tail-coverts with metallic ocelli . . . . . . *malaccensis.*
    d' Greater tail-coverts without metallic ocelli.
      c'' Head without noticeable crest . . . . *schleiermacheri.*
      d'' Head with very long, thin-vaned crest . . . . . *napoleonis.*

GREY PEACOCK PHEASANT

Polyplectron bicalcaratum bicalcaratum (Linnaeus)

Singly or in small families these birds are found among the mountains of Burma and Western China. It is difficult to see them, for their senses are very keen, and they are never off guard. They are shielded by terrible growths of thorn cane, or when approach seems easy, a flock of babblers will discover you, give warning, and send the pheasants off with a rush. They scarcely ever fly, but skulk through the jungle, ascending trees only to roost upon a limb at night.

PLATE LXXVI.



GREY PEACOCK PHEASANT.

THE GREY PEACOCK PHEASANT

Polyplectron bicalcaratum bicalcaratum (Linnaeus)

NAMES.—Generic: *Polyplectron*, many-spurred; Gr. πολύς, many, + πλῆκτρον, plectrum, something to strike with, a cock's spur. Specific: *bicalcaratum*, two-spurred, L. bi., two + calcar, a spur. English: Common or Grey or Iris Peacock Pheasant. German: Spiegelpfau or Tschinquis; Pfaufasan. French: Chinquis; Éperonnier Chinquis. Native: Doungkulla (Arakan and Pegu); Shuay dong (Tenasserim); Munnowur, Deyodahuk (Assam); Deo-dirrik (Garo Hills); Daung-kula (North Burma and Yunnan); Wo-graw (Kachin); Chintchien-Khi, from which Chinquis is derived (Chinese).

TYPE.—Locality: "Habitat in China." Describer: Linné. Place of Description: Sys. Nat. 1766, p. 267.

BRIEF DESCRIPTION.—Male: Throat white. Entire plumage dark brown, finely dotted with white. Mantle, scapulars, wing-coverts and inner secondaries all with a large, round, central ocellus, near the tip green and violet, changing to purple, framed in successive rings of black, brown and dirty white. The long tail-coverts and the tail-feathers each has a pair of similar ocelli, changing from green to purple. Female: Brown, mottled with pale brown. Ocelli on back and wings reduced to black spots, with some violet gloss; none on tail-coverts, and reduced on the tail. Throat white.

RANGE.—Burma, Eastern Yunnan and Siam.

THE BIRD IN ITS HAUNTS

I HAD spent several weeks in the haunts of this bird, one of the most difficult to observe of all the pheasants, and then there came that last day in camp which, to one who forms associations quickly with all pleasant wilderness places, is always a day of sadness. One starts out with a point of view very different from that of the preceding days; each ridge crossed brings the thought, "I shall never see this again." One's eyes strain here and there, searching for the many things which have been hidden, hoping that, at the very last, some obscure point in the life of the wild creatures will be revealed.

My last view of the Grey Peacock Pheasant in a wild state was made memorable by several incidents. I had early mounted the highest ridge I could find and looked long on the tumbled forest which stretched out over Yunnan. Then, for two hours, I clambered painfully along the steep side of a ravine without observing anything of especial interest, except a number of squirrels, which filled the gloomy forest with news of my progress. They were beauties, grizzled rufous above, with the under-parts startlingly marked with five longitudinal bands, two of white, and three of black. The forest trees were just bursting into bloom, and the white and pale buff masses of blossoms could be seen for miles across the lower hills, while their delicate fragrance was carried by the wind to even greater distances. Trogons sat upright on the swinging lianas or darted with deep-bowed wings after passing insects. With their wine-coloured heads, rich tawny backs, and warm rose under-parts, they formed a beautiful mosaic of soft hues, flashing like a many-coloured jewel as they veered in mid-air, or, on their perch melting as quickly into the forest shadows.

Finally my further advance was absolutely barred by an impenetrable tangle of massed thorn palms, and I descended to the bottom of the narrow valley. Here was a trickle of water, sometimes seeping beneath the surface or flowing through a shallow bed of ooze. I saw something glisten through a growth of tall swamp plants, and a closer glance showed the rounded, mud-dripping back of a great water buffalo, or so it seemed. Now and then a great sigh or snort of satisfaction came from the creature and the water soused over the massive slate-coloured hide. I approached no closer, for I had already been treed more than once by these uncertain beasts. But before I began to make a detour to windward a movement of the animal flattened several intervening stalks, its head came into plain view, and I was astonished to see, not a pair of bovine horns, but a unicorn—a rhinoceros! I had never expected to see one of these tropical creatures in this northern region, and could hardly believe my eyes.

Another surprise came quickly, as a Grey Peacock Pheasant stepped fearlessly from the palm-covered slope toward the beast. The rhino rolled and snorted, and must have spattered the bird with drops of water, but calmly keeping on its way, the pheasant reached the stream a few yards above the wallowing animal, drank again and again, and stepped daintily off into the jungle undergrowth with not a backward glance. It was probably accustomed to the presence of gaur or "bison" in this region, and saw no difference in this interesting stray from the south. The natives hereabouts had known of no rhinoceros for the last eleven years. I shall never forget the fearlessness of the beautiful bird so close to this great fearsome beast. After watching it for some time I crept respectfully around and went on my way toward my hiding-place near a well-worn jungle route of kaleege pheasants.

GENERAL DISTRIBUTION

The term "Indo-Chinese countries," which is usually given as the habitat of this species, is very indefinite. But we have indeed comparatively few definite records as to the occurrence of the Grey Peacock Pheasant on the borderland of its range. To the north of the Brahmaputra it is found in the foothills of the Bhutanese Himalayas and as far to the westward as the terai below Darjeeling. In India to the southward it has not been recorded west of this river, but is widely distributed throughout Assam, the Garo, Lushai, Khasia and Naga Hills, and in Manipur, Sylhet, Cachar, Hill Tipperah, Chittagong, Arakan, Pegu and Tenasserim as far south as Mergui. It is found in upper Burma and in western Yunnan and the Shan States, but in these two latter regions it apparently does not cross to the eastward of the Salwin River. This is not true farther south, for it occurs in the Laos States of western Siam—how far inland we do not know, but I have no certain record east of the Menam River.

GENERAL ACCOUNT

The Peacock Pheasants as a group are denizens of deep tropical forests, and for this reason many phases of their life history must always be shrouded in uncertainty or be gleaned piecemeal from their habits in captivity. We have, for instance, little or no idea of their home range or of seasonal migration. It is an impossibility to follow any individual for more than a few yards at a time. The favourite haunts of these birds are the hill forests, and if they stray to the plains it is only in dense jungled regions. Along the southern border the Grey Peacock Pheasant is found close to sea-level, while Davison has found it at six thousand feet, near the summit of Mooleyit, and I have shot it at almost as high elevations in Northern Burma. In my own experience, and in that of several writers, the birds favour bamboo growth on hillsides, at least in early morning and late afternoon. At other times I have found them more often in denser tree forest.

One writer gives a most forbidding picture of the haunts of this bird, saying that it frequents only the most inaccessible spots, mountains five to seven thousand feet high, the steep sides of which are covered with a dense, massive growth of trees, undergrowth, bushes, bamboo and thorny rattan, all bound together by interlaced climbing plants, so dense that one could not progress more than one hundred yards in an hour. Added to this, outside of the trail the sides are so steep that one can scarcely hang on, and the ground is very slippery. On the other side the underbrush is infested with all sorts of beasts, each more dangerous than the other!

I can personally vouch for the truth of all these unpleasant phenomena, but I have never encountered them simultaneously, and pursuit of the Peacock Pheasant offers, as a rule, so much of interest that the difficulties are quickly forgotten.

When a single pheasant or a pair of these birds has passed me in the jungle, I have often returned to the same spot for several days, but have never observed any such regularity of daily shifting to feeding-grounds and back as we find in pheasants of more open, temperate haunts. The jungle floor offers food—both animal and vegetable—on every hand, and a bird has only to make its way at will here and there to find abundance, and when night comes it would seem as if any tangle of lianas would be as acceptable a roosting-place as another. There is, however, evidence that the same roosts are used for many nights in succession.

It is usually considered as a wary and rare bird, but this impression is given by any species when the observer is a sportsman intent on larger game, or an explorer passing more or less rapidly through the country. When I found this pheasant in any locality, I settled down and for a week at a time devoted myself to concentration on this species alone. By choosing suitable places and working my way through the undergrowth with as much as possible of the silence of the jungle folk themselves, I found that the birds were not very uncommon. I have seen thirteen in a walk of four or five miles. They appear to be very unsociable and are usually observed singly. Only once or twice has more than a pair of individuals been in sight at a time. And when frightened they make their escape silently, not with a loud outcry which might be a warning were others of their kind near by. The single exception I have known to this was when I almost stepped on a hen bird sitting on her two eggs, and the screech with which she half flew, half fluttered off, alarmed me momentarily as much as it must have frightened her.

This subject of comparative abundance or rarity is one which should be given serious thought by any one who is making a list of birds of a given district, or, indeed, who is writing about birds from any point of view. In regard to this Peacock Pheasant we read of its being "common," "not very common," "wary and rare," all in the same region, each term apparently expressing the individual opinion of the writers, but conveying very vague and loose ideas to the reader. If the most abundant bird of the district was taken as a criterion, and the other terms based on relative abundance or rarity, readers could get much better ideas as to the local occurrence of birds.

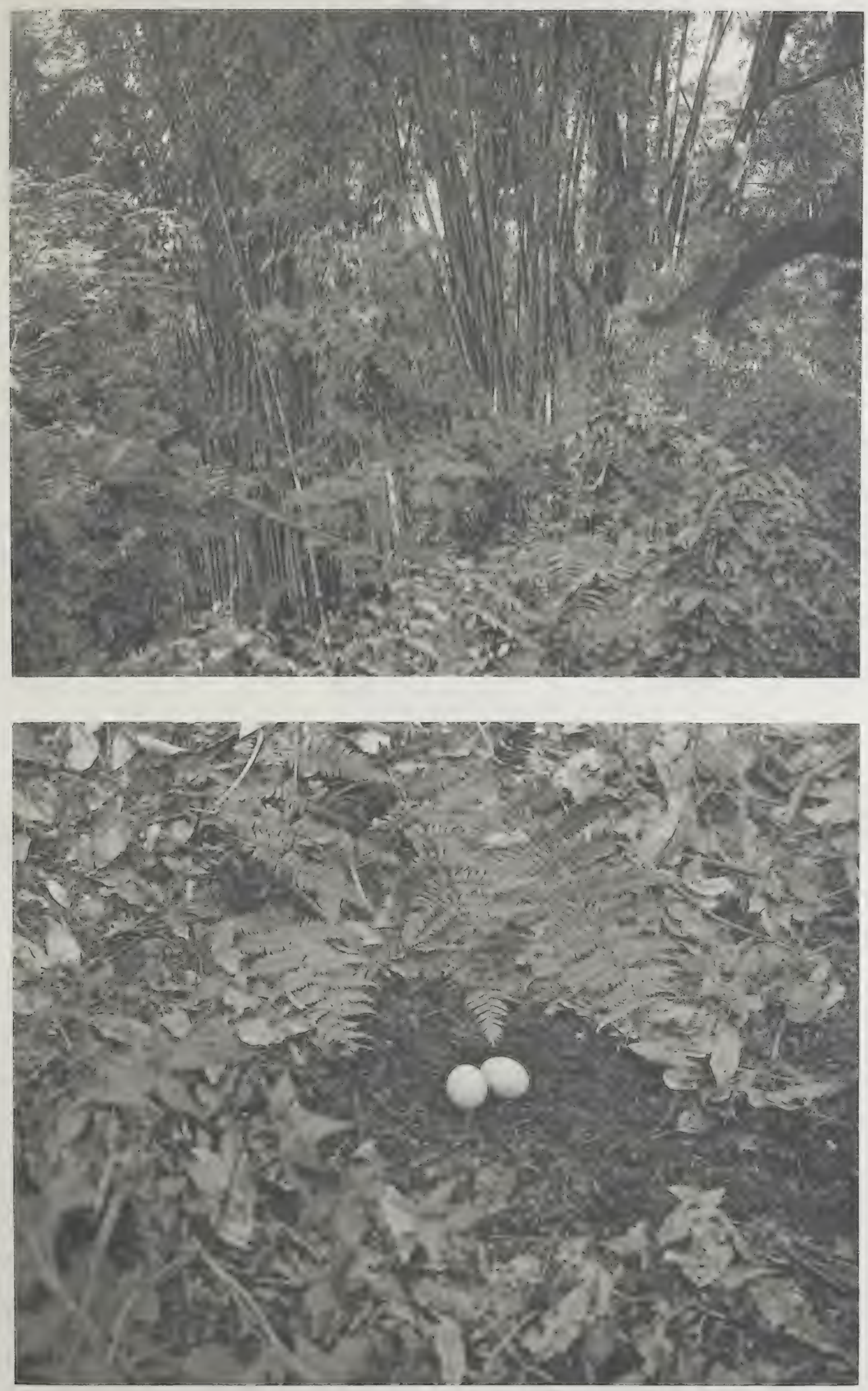
Even when apparently alone, however, these pheasants enjoy keeping up a running conversation with themselves. From ambush I have watched a male which, from the open character of the jungle for many yards around, I could be certain was solitary. And yet for twenty minutes it hardly ceased a low, murmuring, content song, interrupting it only to seize an insect or to peck at the black mould. There seems little doubt that many of the birds remain mated throughout the year, as pairs of adults have been recorded in every month.

The calling, or what corresponds to crowing, of the male Peacock Pheasant, is heard throughout the breeding season, and indeed in some places hardly a month passes when it is not uttered. Early morning and late afternoon are the usual times, and the bird perches upon a branch, not its roost, to give voice. At this time it is not difficult to approach, if a step or two is taken at the moment of each utterance. But, in addition to the keen sight and hearing of the bird, we must add the considerable ventriloquial power which characterizes its crow—all these making it necessary to use the greatest care if even a glimpse of the bird is hoped for. The crow has been described as a very harsh, short, double bark, but I think in this description two calls are confused. Its crow is *Phée-hoo!* very loud, liquid and penetrating, given sometimes every ten or fifteen seconds, or again with a minute or longer intervening between each call. This is the summons of the cock to a prospective mate, or a challenge to any rival cock who may be within hearing. The next most commonly heard utterance is when the bird gives voice to six to twelve harsh croaks, uttered in rapid succession, suggesting the notes of a frog or toad rather than a bird. This appears to be an expression of suspicion or true alarm. It is often heard after a sudden clap of thunder, or a gunshot, four or five birds scattered along the sides of a valley sometimes joining in simultaneously. It has been written *qua-qua-qua.* To my ears, especially when heard near at hand, the syllables sounded more like *wak-wak-wak.* As I have said, the crow is usually given from a low branch or a fallen tree, never, as far as I know, from the ground. When the bird is mated, the crowing must be wholly in the nature of a challenge, and at such a time the bird sits quietly and reiterates the note, listening intently in the interim. When a mate is desired, as when a cock bird in captivity knows that a female is in an adjoining run, the bird is much more nervous, and walks excitedly back and forth along its perch, now and then half spreading tail and wings.

I have never seen a Peacock Pheasant in full flight above the tops of the trees, although I have twice seen them scale down from a tree in early morning, perhaps from their roosting-place, and gracefully come to rest on the ground, or in one case upon a rounded boulder at the edge of a stream. When surprised on a low branch they drop to the ground with closed wings, or when come upon in open jungle they leap into the nearest thicket with no attempt at flight. Even when flushed with dogs I have never seen them take to any extended flight, but merely flap easily upward to some branch well out of reach of the yelping canines. Baker, however, has been more fortunate, and says that the pheasant "is a slow, heavy flier until it gets some distance on the wing, when its pace increases and it swoops down the sides of the hills with no little velocity." These pheasants have a beautiful gait when undisturbed, stepping high on their slender, dainty legs, stopping every now and then and looking around for danger,

HOME, AND THE NEST AND EGGS OF THE GREY OR BURMESE PEACOCK PHEASANT

During the height of the rains the hen Peacock Pheasants retire to the deepest, most secluded parts of the jungle; perhaps in some dense bamboo tangle. Here, on the ground, among ferns and moss and fallen leaves, she lays two white eggs, which are so conspicuous that they would attract every hostile eye, were it not that she sits close for three weeks, her brown mottled hues merging perfectly with the surrounding vegetation.



HOME AND THE NEST AND EGGS OF THE BURMESE PEACOCK PHEASANT.

as motionless as stone, and often with one foot drawn high up. When running at full speed the head and tail are held low and the legs seem fairly to twinkle, so rapidly do they move.

The diet of these pheasants is varied, and includes seeds, both hard and soft, small fruits, leaves, insects and worms of all kinds and small snails with their shells. Several writers have mentioned trees which, when the fruit ripens, prove very attractive to Peacock Pheasants, and these birds may be found in early morning, both in the branches and on the ground, feeding upon this fruit. When I have shot birds near Kachin villages I have invariably found paddy in the crop, together with small insects. They are especially fond of a small fruit, not more than 10 mm. in diameter, which in colour and shape exactly simulates a miniature tomato.

I found one undoubted roost in Burma where two birds rested every night, but once when I had approached by moonlight, and had made out the two silhouetted against the dim light, I tripped over a meandering liana and thoroughly alarmed the pheasants, and the following night they deserted the place for a less conspicuous one. The roost was on the horizontal branch of a deciduous tree, under which sprouted a dense growth of bamboos. I cut my way later into the heart of these, directly beneath the branch, and from the abundance of sign the roost must have been occupied for many weeks.

I saw no actual tragedies in the lives of these creatures, but the certainty of a trapped bird being found and devoured within an hour or two after capture showed how numerous are the enemies of this species. I never observed any intimate companionship between these Peacock Pheasants and babblers, such as exists in the case of *Gennaeus*, perhaps because the former, being so solitary in their nature and quiet in their progression through the forest, do not frighten up the insects for which the babblers are on the look-out, and which form the main bond in this chance association.

In scouting for *Gennaeus* I now and then caught a glimpse of this bird in the valleys along the northern Burma-Yunnan border. In December the birds were usually solitary, associating neither with their own kind nor with other species.

For many minutes one day I watched one scratching near a clump of bamboo, among the half-decayed fallen stems. Unlike most pheasants, it did not raise the head high, now and then, to take a survey, but kept a keen watch with eyes and ears as it sought for food. Bamboo sheaths were falling all around through the branches with a succession of loud swishes, or giving forth a sharp, almost catlike snarl as they struck a living stem and the two silicious surfaces glanced together. The disappearance of this bird revealed the wonderful woodcraft of these creatures. It moved a few inches from one spot to another, where I could see it in dark silhouette as it scratched. After a moment it ceased and I watched, as it stood absolutely motionless for several minutes. I rose and walked toward it, and still it never moved, until, when I reached the spot, I found that its apparent form had dissolved into a medley of distant shadows. The pheasant had vanished utterly.

Only once did I see a Peacock Pheasant in the trail, when my pony turned a sharp corner. It falls a frequent victim to the snares of the Kachins and other wild tribes hereabouts.

HOME LIFE

The breeding of these pheasants takes place during the rains, and the birds retire to the deepest, most secluded parts of the jungle. Hence records of nests are few and scattered and often are based wholly on the reports of natives. In a nest found in Cachar by Mr. Clarke in the month of May the eggs were well advanced in incubation. "The nest was placed at the foot of a large bush, which stood amongst 'some' grass and small cane jungle, on undulating ground. The female flew off the nest on our approach, when the Kookie shikári who was with me said he would catch the bird. He made a cone-shaped basket of grass, put it over the nest and retired with me to a short distance. After about fifteen minutes we approached stealthily and threw a cloth over the basket, securing the bird, which had returned to the nest while we were away, and, lifting the edge of the cone, had crept inside.

"The eggs were of a *café au lait* colour; the nest was circular, about nine inches in diameter and three inches in depth, made of twigs and leaves roughly put together, with an apology of a lining of the bird's own feathers, and possessed sufficient cohesion to permit of its removal, eggs and all, to my bungalow. The young one that was hatched was covered with greyish down, and looked very much like a fowl chicken. Notwithstanding all my care, it died in a week's time." Baker says the eggs are laid on a few leaves and debris, which have collected in a small hollow in or near a ravine, and usually where the undergrowth is dense.

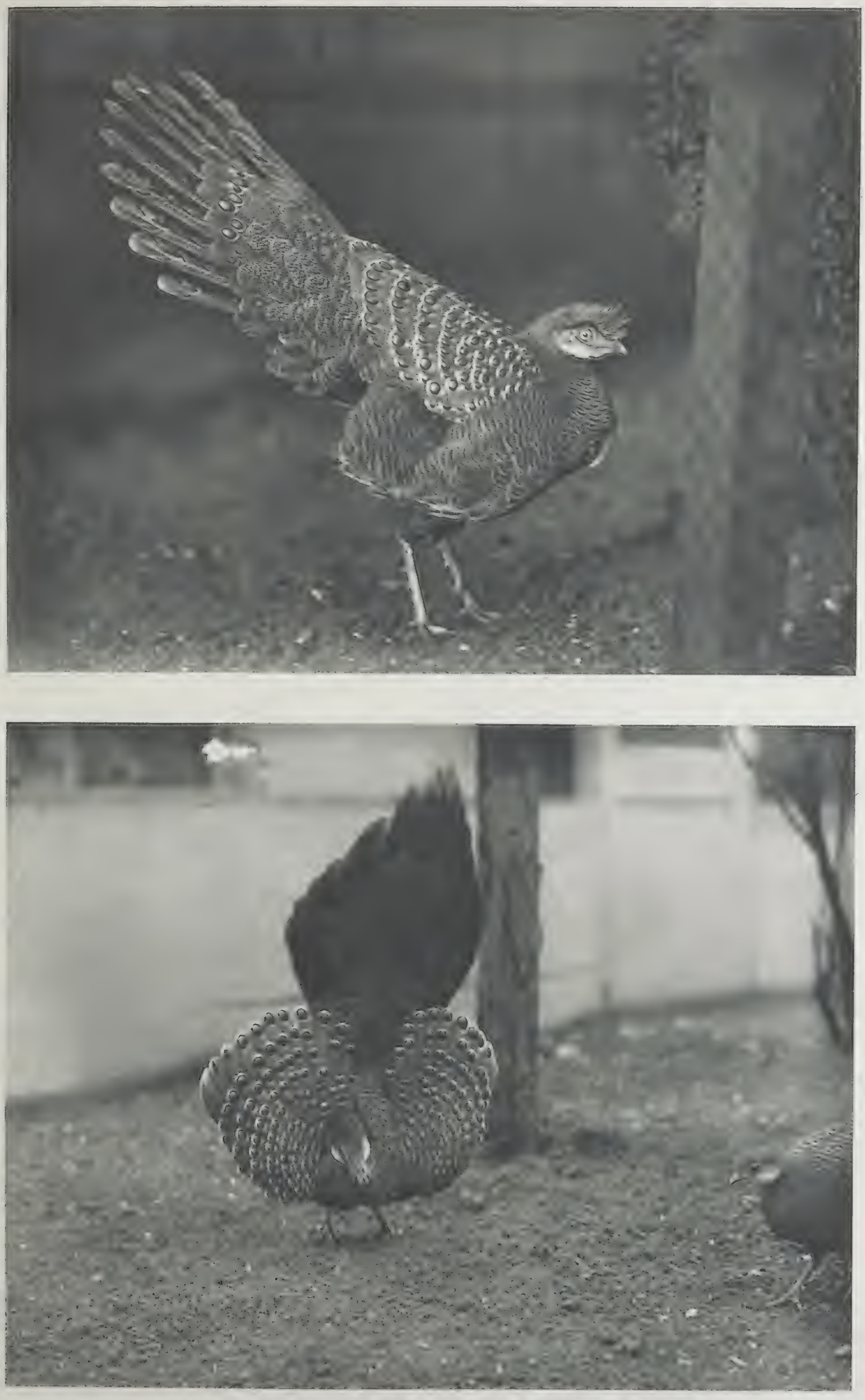
May and June are undoubtedly their favourite breeding months, but in captivity they sometimes begin to lay much earlier than this. As to courtship and fighting, we have no evidence from birds in a wild state, but the presence of from two to five spurs would indicate that serious encounters must take place, and in an aviary I have known one cock to pursue another without ceasing, until the latter was removed at the very point of exhaustion. The courtship is thoroughly well known from birds in captivity, which go through the performance in what is doubtless as complete and normal a way as they do in their native jungles.

It is one of the most beautiful displays among the whole group of pheasants, and so specialized that not only do they go through the preliminary actions peculiar to *Gallus* and the lateral showing off of *Phasianus* and others, but the climax is a wonderful frontal display in which every ornament in the plumage is brought to bear to influence the little female.

As we have made priority such a fetish in nomenclature there is no reason why a similar rule should not hold in descriptions of habits, and especially when the diction is delightful and the narrative interesting, it is a pleasure to quote from early authors. Over a quarter of a century ago M. Edouard Godry writes as follows ("Bulletin de la Société d'Acclimatation," 1888, p. 984) concerning the most interesting stage in the courtship of the male Peacock Pheasant: "Il marche légèrement, redressant sur sa tête une petite huppe composée de plumes fines qui retombe en avant sur le bec, il enfle son plumage avec orgueil, et deploie gracieusement, tout en marchant, l'une de ses ailes, tantôt la droite, tantôt la gauche, puis se met, de temps en temps, à gratter le sol de la volière. Après quelques recherches dès qu'il a le bonheur de trouver quelque insecte ou menu grain, il le saisit avec empressement, et tout en tenant délicatement, du

LATERAL COURTSHIP DISPLAY OF THE PEACOCK PHEASANT

THE courtship of this bird is one of the most remarkable among birds. It combines the methods of the others. The first phase is a lateral display, like that of the junglefowl and typical pheasants, the cock approaching the hen from the side, and flattening itself to right or left in the direction of the object of its courtship.



LATERAL COURTSHIP DISPLAY OF THE PEACOCK PHEASANT

bout du bec, son heureuse trouvaille, il invite sa femelle, par un gazouillement charmant et prolongé, à venir profiter de la bonne aubaine. Dès que celle-ci s'avance, l'Éperonnier se redresse sur ses pattes, enfle fortement son plumage, puis lui lance la friandise si précieusement conservée, et, au moment où elle vient pour la ramasser, il la salue à sa façon en s'inclinant vivement, et en déployant, tout-à-coup, les ailes et la queue. Il se met alors à faire la roue en forme d'eventail. A ce moment, son œil brille du plus vif éclat, et toutes les ocelles apparaissent dans leurs plus brillantes couleurs, tout en projetant de belles teintes irisées, suivant l'effet du jour. C'est alors qu'on peut juger de la grande beauté de cet oiseau dont les ocelles, en forme d'yeux brillants, sont rangées avec la plus parfaite symétrie et par ordre de grandeur."

Charles Darwin in his "Descent of Man" (Westminster Edition, pp. 404–405) devotes a paragraph and a wood-cut to the display of the Peacock Pheasant. He says in part: "The tail and wing-feathers of this bird are ornamented with beautiful ocelli, like those on the peacock's train. Now when the peacock displays himself, he expands and erects his tail transversely to his body, for he stands in front of the female, and has to show off, at the same time, his rich blue throat and breast. But the breast of the Polyplectron is obscurely coloured, and the ocelli are not confined to the tail-feathers. Consequently the Polyplectron does not stand in front of the female; but he erects and expands his tail-feathers a little obliquely, lowering the expanded wing on the same side, and raising that on the opposite side. In this attitude the ocelli over the whole body are exposed at the same time before the eyes of the admiring female in one grand bespangled expanse. To whichever side she may turn, the expanded wings and the obliquely-held tail are turned towards her." As Pocock has shown ("Avicultural Magazine," 1911, pp. 229 *et seq.*), this is only half the truth. But I have been able to detect no sign of there being two distinct displays. If we admit two we might as well add a dozen more. The cock, from the beginning of his courtship in the first warm days of early spring to the full achievement of his frontal display, goes through many stages, each increasing in complexity and vigour, but all phases merely, not separate types of display.

One of the first signs of excitement is the repeated raising and lowering of the recurved crest, its erection bringing it forward until it partly conceals the beak. Then, when the female appears in the distance, we may notice a quivering and a partial spreading of both wings and tail. This may increase in emotional intensity, or at the recurrence of a week of cold, unseasonable weather disappear entirely. The wing- and tail-spreading soon reaches the stage of definite focusing on the female, and as she walks about the cock will keep all the upper ocellated plumage possible in full view. I have seen all sorts of positions assumed, both that given by Darwin in his wood-cut, and the pen-and-ink drawing in the "Avicultural Magazine," and many others, all dependent on the cock's relative position to that of the hen. I have seen him display thus from a perch and from the heart of a dense-foliaged evergreen, where his every movement was cramped. And I have seen a bird in a cruelly low-roofed shipping crate flatten himself and spread over all the floor surface possible when a hen in an opposite crate pushed out her head between the bars. The attempt in each case is so to spread the tail and the secondary feathers that they may simultaneously impinge upon the vision of the hen—the display in general thus representing the extreme in the courtship of other pheasants which have only the lateral showing off.

At this stage the cock begins a nervous scratching of the ground, at first indefinite and with hardly a glance to see if anything edible has been uncovered, but at a still later stage he will provide himself with an insect or some other dainty, sometimes holding it and following the hen quietly, without a sound. He then utters the low content or brooding call several times, and this usually attracts the hen, who approaches. Now is the time for the grand finalé of the courtship display. When she is but two or three feet away, he flings the bit of food toward her. Although I have seen this several times, I am not sure that it is done intentionally, for the beginning of the full frontal display is accompanied with several violent shakes of the head, perhaps to aid in the full erection of the crest, and it may be that in the course of one of these involuntary jerks the food is thrown to the ground. It is pleasant to think, however, that he actually flings it down as a lure, to entice the object of his efforts within the zone of influence of his hypnotic display. Simultaneously with the jerking of the head, the breast feathers are puffed out and the bird leans forward, displaying every ocellus in a way which I have never seen correctly depicted. The wrists are lowered until they practically rest upon the ground, the primaries not spread, but pointing upward in the normal direction as in the closed wing. The coverts, secondary and tertiary feathers are spread to the utmost, the innermost joining across and concealing the plain back, and the outermost touching the ground. The tail and the row of greater coverts are perfectly vertical, and spread so that they form a complete half-circle, fanning out to within an inch or two of the ground, the ocelli, even on the shorter feathers, showing clearly outside those of the secondaries and wing-coverts. The most remarkable thing is the apparent independence of motion existing between the primary and secondary feathers and their coverts. The latter, even some of the shorter rows, splay out far beyond the closed primaries in a manner which would never occur, nor even be thought possible, in the ordinary spreading of a wing.

The frontal type of courtship display is characteristic of the argus pheasants, peacocks, tragopans and impeyans, but the relationship is evident only between the present group and the argus. In the others it is probably a parallelism.

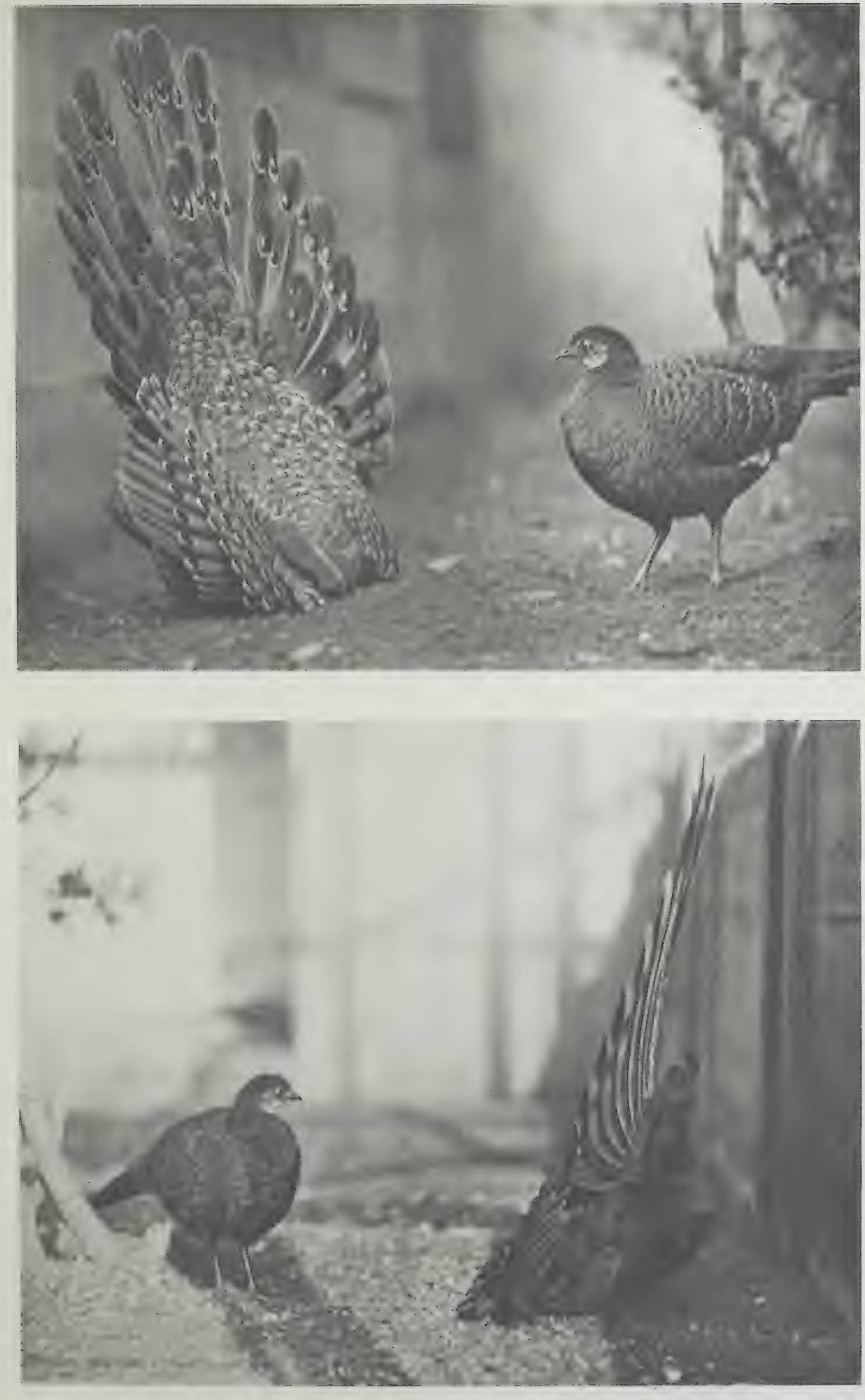
CAPTIVITY

As we have seen, the first record of a Grey Peacock Pheasant was based on a bird living in captivity in England one hundred and seventy years ago. Since then they have been kept and bred many times in captivity, both in zoological gardens and in private aviaries. There are records of the age of thirty-nine individuals which have lived in the London Zoo. The average length of life has been four years and a half, while one pheasant lived to the good old age of fifteen years. The length of the period of incubation is twenty-one days.

There is abundance of evidence that the normal complement of eggs in this, and indeed in all other, species of Peacock Pheasants is two. In the files of the "Bulletin Société d'Acclimatation" and elsewhere we find records of at least sixty layings of these birds. Of these all consist of two eggs, except in one case, where a single egg was deposited at the extremely early date of February 25th. I can add to this about thirty additional records, including a half-dozen of my own, where two

FRONTAL COURTSHIP DISPLAY OF THE PEACOCK PHEASANT

As the courtship reaches its height the male assumes a frontal position, and increases the arc of spread of the wings and tail until they form a continuous circular fan of ocellated feathers, extending to the very ground on both sides. The hen is affected neither by the æsthetic beauties of this wonderful display, nor the regularity of form or pattern, but apparently by some subconscious reaction to the continued repetition of the courtship performance.



FRONTAL COURTSHIP DISPLAY OF THE PEACOCK PHEASANT

was the full number, and in several females which I have dissected the condition of two ova showed that they, and they only, were about to be laid. I have found the nest both of this and of a closely related species each with two eggs half incubated, and writers are almost unanimous on this point. The only exception I can find in literature is where Stuart Baker writes as follows of the Grey Peacock Pheasant in North Cachar: "They breed in March, April and May, laying from two to six eggs, generally four or five, just like those of the common fowl, but more rich in hue. Many I have taken could have been paired with richly coloured eggs of the Cochin-China fowl." Hume writes: "In captivity the females produce two or three broods in a year, and lay only two eggs to a sitting. In a wild state they probably lay more eggs, and only once a year." This last statement is, of course, valueless save as an expression of opinion, which is not borne out by facts.

In captivity, at least, the eggs are deposited every other day, and when the second is laid the female begins sitting at once. The breeding dates extend from late February to the end of July, but the usual time is late March and the early half of April.

I have in my collection two sets of two eggs each which were taken near Margherita, Assam, in June. Two are slightly paler than the others, but the general hue of all is a pale pinkish white. The two paler eggs show a few fine chalky pits scattered irregularly over one side, while in the other eggs the pits are not different from the rest of the surface in colour. The shape is a broad oval, and the measurements as follows: first set, 46 × 39; 46 × 37; second set, 48 × 37; 44·5 × 37·5. I have seen other eggs much more profusely flecked with white, filling the pits and extending out on the surface as a tiny irregular smear behind each pit in the direction of the small end of the egg.

It has long been the custom when breeding the Peacock Pheasant in captivity to remove the two eggs of the set as soon as they are laid, and thus to induce the hen, in the course of a few weeks, to lay again. If the season is suitable and the diet satisfactory a single hen will produce eight to twelve or even fourteen eggs in a season. From observation of the chicks we are able to record several interesting facts which would probably remain for ever unknown had we to depend upon wild birds alone. The peep of the chick is much shriller than that of the common fowl, but it is seldom uttered, and only when the young bird is, or thinks it is, in distress. If the chicks are hatched and mothered by a bantam they are sometimes trampled or starved to death, much more often succumbing to one or the other of these dangers than do the young of other species. When their own mother cares for them we see the reason for the occasional catastrophes. Although her tail is much shorter than that of her mate, yet it is relatively quite long and usually carried low and arched from side to side. When she starts out to seek for food, her two chicks keep close behind, well in the shelter of the tail, and come out only at intervals when she summons them to get a bit of food, after which they dart back again. Looking down at her, one would often be wholly unaware that any chicks accompanied her, so hidden do they keep. I have seen a chick with a bantam, rush out at her cluck, seize the morsel, and dive back again, when the hen, scratching vigorously, would step backward full upon the little chick, which, obedient to its instincts, had instantly come "to heel." Thus the little fellows are in constant danger of being trampled by their foster-mothers, unacquainted with the jungle customs of the small *Éperonniers*. So pronounced is this attachment to the parent, that the chicks may be allowed to range at large with the hen throughout the day, with no danger of their straying or getting lost, as the chicks of other pheasants would be almost certain to do.

The hunger tragedy is due to another peculiarity. Ordinary chicks are accustomed to pick up their food from the ground. Even an hour after hatching they will make abortive, awkward stabs, wholly ineffectual, but soon correlating their movements so that they can feed themselves even in a brooder, with no guide to imitate. But the young Peacock Pheasants, for a week at least, take all their nourishment from the beak of their mother, and will often stand in a dishful of food, helpless until a morsel is picked up by the hen, when they rush to it and pick it daintily from her beak. Some hens are faithful, and will thus feed the chicks as long as they show signs of hunger, but quite as often a fowl will cluck and give the chicks a small piece of food and then neglect them while she herself eats, her instincts telling her that the chicks ought to be able to pick up the food for themselves.

So in rearing these birds careful watch should be kept the first week, and if the hen does not feed them, it will be necessary to give them nourishment from a pair of small, pointed forceps. When they have once learned to feed themselves they are past the danger stage, and chase insects with great rapidity and success, soon learning to fly and leap into the air as an aid to pursuit.

It is rather difficult to distinguish the sexes in birds only a few months of age, but the ocelli of the males are darker and more accentuated, and the irides of this sex are lighter.

RELATION TO MAN

The wild Peacock Pheasants seldom come into direct contact even with the natives, and the small tithe of rice which an occasional bird levies upon the paddy-fields is not worth a moment's consideration. They are trapped in numbers, and in the store of a Calcutta bird dealer I have seen fifty or more crates piled up at one time, each with its *Éperonnier* awaiting shipment to Europe. Where, as in various parts of Cachar, the natives from time to time make new cultivation clearings within the forest, they snare these birds as they come to the edge of the open space in the early morning. A sapling is bent down and a wire or cord attached to the end. The other end of the string is a noose which is pegged down and spread around a shallow hollow in the ground. At the bottom of this excavation a few small bits of bamboo act as the treadle, and to these are tied certain red berries of which the birds are very fond. A single peck at these is often sufficient to release the trigger, and the sapling springs up, the noose ensnaring the bird's neck or legs. When it is desired to catch the bird alive, a slender sapling is used, which allows the bird to rest upon the ground, while the noose prevents its escape. In this case the trap must be visited before nightfall or shortly afterwards and the bird removed. But when the pheasant is wanted for eating, a stouter spring snaps the bird high into the air, the shock often mercifully killing it at once, but in any event lifting it high above the reach of the civet cats, jackals and the numerous other small carnivores which would leave only a pile of feathers were the bird within leaping distance of the ground. The snaring of the bird when it comes to its nest, by means of a cone-shaped basket woven of grass, to which I have already alluded, is an unusual method practised in Tenasserim.

DETAILED DESCRIPTION

Adult Male.—Feathers on the crown elongated, disintegrated and recurved, forming quite a conspicuous brush-like crest. This crest is brownish black, finely barred with white. In fully adult birds the white predominates, giving a frosted appearance. The nape and hind-neck feathers are also long and loose webbed, but the white gives place to brown, and the barring is coarser. The entire upper plumage is brown, varying from dark sepia to fuscous or dark brown in different individuals. All this portion of the plumage, including the mantle, scapulars, back, wings (except the primaries), rump, tail-coverts and tail, is profusely speckled and spotted with white or buffy white, with a slight tendency to the formation of a mottled terminal band on the back and rump. The spots increase in size from the mantle to the tail. The mantle, scapulars, wing-coverts and tertiaries are all tipped with a band of white, within which lies a round, iridescent ocellus framed in complete rings of black and brown. This metallic eye is dark green, shading into violet at the distal border, and giving purple and blue reflections in certain lights. On the upper mantle, where these spots appear, they are first seen as a small, dull-brown circle with a darkened centre. The iridescence shows first as a narrow elliptical shaft streak, and this changes at once into a small but perfect and round ocellus. These anterior ones are less than 10 mm. in diameter, while on the tertiaries they are 15 mm. across.

The primaries are plain dull brown, faintly mottled with buffy white on the outer web, and their coverts are devoid of ocelli. The secondaries show an abrupt change, a heavy dotting of white, especially on the outer web, where many of the spots are angular. All the secondary coverts have very large ocelli. The occurrence of spots on the secondaries themselves shows much variation. At one extreme the outermost seven show no ocelli; in the 8th the spot is asymmetrical, the metallic portion being confined to the outer web, while from the 9th inwards it is very large and perfect. Again, a hint of the ocellus may occur even on the 5th secondary, in the *centre* of the outer web, a small clouded nucleus which is really only a dulling of the white spots. In the next feather the spot has enlarged, it has a very dark, non-iridescent centre, but has not quite reached the shaft. The 7th secondary shows the eye broken across the shaft, but smaller on the inner side, with the gloss still confined to the outer web, while in the next two feathers the symmetrical perfection of the ocellus is attained.

The ocelli die out abruptly on the lower mantle, so that the lower back, rump and shorter upper tail-coverts are unmarked. The tail-feathers and the longer coverts each have two ocelli, one in the centre of each web, framed in black and brown, but with the white circle lacking or prominent only on the proximal side.

The longer, ocellated tail-coverts are very interesting. They really form a secondary tail, being sharply differentiated from the remaining coverts, which sprout more or less irregularly, merging insensibly with the feathers of the rump. This line of rectrice-like feathers is separated from the succeeding coverts by as much as 13 mm., while they are closely apposed to the line of rectrices, only about 4 mm. separating them. In a bird with twenty rectrices there are eighteen feathers in the secondary line of display. The importance of this character may be judged by the length of the inner and outer feathers:

Outer covert	77 mm.
Outer rectrice	165
Inner covert	200
Inner rectrice	330

The two outer feathers in the line of coverts show no ocelli; in the next the ocelli are large brown spots with dark centres, the remaining coverts showing pairs of perfect ocelli. When the bird is in full frontal display, as I have described elsewhere, this line of eyed coverts forms an inner ring of spots below those of the tail, but flattened against those feathers. The caudal ocelli are rather oval, and are ordinarily wholly green, changing to purple. The number of tail-feathers actually varies from twenty to twenty-four in adult males. The usual number is twenty-two. This variation has nothing to do with locality or age, and the sequence of moult is unaffected either by the lesser or the greater number.

The anterior part of the face is bare, except for a scattering of short, stiff featherlets. The chin and throat are pure white, changing abruptly into a narrow zone of white-tipped feathers on the lower throat and around the face. The lower parts are brown, with several successive dotted bands, alternating with clear brown interspaces, the bands curved, following the contour of the feather tips, producing a general wavy effect of the ventral plumage.

Mandible, dark horny brown on upper and tip of lower; cere and base of lower mandible pale yellowish or pinkish. Facial skin yellowish or pinkish; irides pale yellowish to dead white; legs and feet leaden black. The adult males usually have two spurs on each leg, but this is occasionally varied. The general proportion of number of spurs, taken from a large series of birds, is 2 + 2 = 70 per cent.; 2 + 1 = 20 per cent.; 1 + 1 = 5 per cent.; 3 + 2 = 5 per cent. They are sharp and slender, but of moderate length, never exceeding 10 or 12 mm. Weight, 1 lb. 8 ozs. Length, 680 to 750 mm.; bill from nostril, 13; wing, 215 to 230; tail, 355 to 430; tarsus, 75; middle toe and claw, 57 mm.

ADULT FEMALE.—The hen Grey Peacock Pheasant is a much smaller bird than her mate, the relative proportions being two-thirds as regards length, and with a tail not much more than one-half as long.

The elevated head-feathers are less disintegrated, more distinctly barred with buffy white, and are not recurved, so that the crest is much less conspicuous than in the other sex. The chin and throat are white. The neck all around and upper mantle are dark brown, finely barred with irregular markings of a pale buffy brown, and in about fifty per cent. of individuals the shafts of these feathers are conspicuously white.

The primaries and their greater coverts are dull brown, unmarked. The remainder of the mantle and wings is brownish black, with several irregular, speckled, transverse bars of pale or ferruginous buff. At the tip is a speckled, broken band of white or greyish white. The ocelli occur in the same regions as in the male, but are in a much lower state of development. Just below the terminal white band is a large rounded area of black, which, especially on the inner greater coverts and tertiaries, is more or less glossed with purple. This incipient ocellus is bounded above by an imperfect, speckled whitish spot or band. The back, rump and upper tail-coverts are dark brown, stippled and pencilled with buffy brown. Most of these feathers have the shaft of a glistening white, and this hair line is expanded near the tip into an irregular, conspicuous white spot.

In all the females which I have examined there are ten pairs of rectrices. The longer upper tail-coverts and the tail-feathers are brown, with numerous, widely separated, imperfect, transverse bands composed of dots and blotches, buffy except on the tips of the feathers in both series, where they are white. On the outer pairs the barring is lost and the dots decrease. The ocelli are present on the rectrices, but are mere oval green spots without frames of other colour, save an indefinite zone of blackish. There is great variation in the development of these ocelli in different individuals, and I have seen an adult bird in which there were traces of the gloss only on the central feathers. In about half of the specimens the ocelli are present on the upper tail-coverts, in spite of the assertions of many writers to the contrary.

The face is bare, as in the male. The breast and under-parts are brown, minutely speckled and lined with buffy markings, usually with curved, clear brown interspaces breaking the mottled areas into transverse bands, fairly distinct on the visible portion of the feather. The under tail-coverts show coarse, white speckling toward the tips of the feathers.

Terminal half of the beak black; base and facial skin yellowish or pinkish flesh. Iris pale grey to whitish. Legs and feet dark lead colour. Weight, 14 ozs. Spurs are entirely absent, with usually no indication of their position. Length, 500 mm.; bill from nostril, 12; wing, 190; tail, 250; tarsus, 67; middle toe and claw, 55 mm.

CHICK IN DOWN.—Dorsal surface from forehead to tail tuft inclusive, dark rufous or chocolate brown, with two conspicuous, broad, lateral lines of pale yellowish buff, extending from the scapular region to the tail. Wing down dark russet. Tips of sprouting flights and greater coverts dark brown finely mottled with buff near the outer and terminal margins. The coverts with an indistinct terminal shaft-spot, white in the greater coverts, rufous in the median. Face, sides and under-parts yellowish buff, the ear-coverts dark russet, and a tinge of the same colour on the breast. No distinct facial markings. Seven primaries and six secondaries sprout early.

Iris slate grey; bill black; legs and feet dark flesh colour. When first hatched the young Peacock Pheasant resembles a golden chick, but is much darker. The bill measures 5 mm.; tarsus, 20; middle toe and claw, 18.

JUVENILE PLUMAGE.—This is a very indefinitely patterned garb. The down persists on the head and neck for a long period. The juvenile feathering of the body, wings and tail is dark brown, mottled at the tip and margin of the feathers, on the upper surface with rufous, and below faintly tipped with whitish. The most decided markings are on the tertiaries. These feathers are pointed and show a series of six or eight broken, irregular cross-bars of mottled rufous, while the tip has a broad band of the same colour, enclosing a triangular, unmarked space of dark brown. In fact, on many of the smaller feathers a small clear area just above the rufous tip suggests an incipient ocellus.

First Year Male Plumage.—The adult plumage is acquired slowly, and the first year cock reaches only the stage of development of colour and pattern of the adult female.

The loose-barbed plumage of the top of the head and hind neck is brown, very obscurely barred with paler brown. On the upper mantle the feathers become more firm, and show several irregular cross-bands of olive grey. Posteriorly we notice a slight widening of the black interspace between the two terminal bands, and in the next two or three rows of feathers this shows a rounded concentration, first of dark brown, then black, pigment, and finally, on the hinder mantle, scapulars and wing-coverts a gloss begins to be perceptible, which, on the greater coverts and tertiaries, becomes a fairly well-developed violet ocellus with fainter greenish reflections. Simultaneously with the development of the dark pigmental spot there develops along its distal margin in the terminal grey band isolated dashes of buffy white. These coalesce into angular splotches, much broken, but not mottled by the brown ground colour as we proceed backward, until we have a wide white border of angularly associated white lines, about 1 mm. in length, forming a wide broken distal frame, partly surrounding the ocelli.

On the secondaries the last hint of gloss, and indeed of a distinct pigment ocellus, dies out on the 9th, the succeeding eight feathers showing an irregular freckling of the short white lines on the outer web. The primaries are wholly uniform dark brown. The scapulars seem to carry the ocellation across the back, but there is actually a continuation of the olive-grey banded feathers of the upper mantle straight down the back, with little change except for an alteration in colour of the rhachis from brown to white, producing the finest of hair lines, ending, however, in a tiny subterminal enlargement. On the rump and shorter tail-coverts this is rendered less conspicuous by an irregular number of rounded, lateral white spots, which appear near the tip of the feather. On the longest tail-coverts these are quite numerous, a dozen or more on the distal part of each web. Above these we find the broken cross-bars which characterize all the dorsal plumage.

The rectrices proper show the same general pattern, with the important addition of a separate green ocellus with violet reflections near the terminal portion of each web, with, however, no hint of a white frame. In backward birds the gloss may be absent and the ocelli only clouded blotches of brown or black. As we proceed outward the broken barring becomes less and less apparent, until the outer rectrices show plain, dark-brown webs; two sub-terminal ocelli with a freckling of small white spots along the tip.

The chin and throat are dingy white, shading rather gradually into the brown ventral plumage. This is identical in its vague olive-brown barring with that of the upper neck and anterior part of the mantle. The only exception is that the longest under tail-coverts show a few rounded, whitish terminal spots. The spurs are barely discernible.

In birds in the same moult, but which shed their juvenile plumage at a somewhat later stage, well-marked variations occur. The barring of the body plumage as a whole is less olive, more of a colder grey. The violet iridescence is more strongly developed, the terminal white bars more coalesced, and, most important, the row of longest upper tail-coverts often show the twin ocelli as well developed as the rectrices. The chin and throat are distinctly whiter, and the spurs are well-elevated, rounded knobs.

A few months after this plumage has been assumed, if one or more feathers are pulled out they will be replaced by others of full adult colour and pattern. In one young bird which I shot, five of these adventitious feathers had taken the place of some torn away by accident from the centre of the hinder mantle. In development of the brilliant, violet, convex ocelli, they equalled those of the fully adult bird, in striking contrast with the surrounding eye-spots of dull black pigment.

The tail-feathers of this moult number twenty. The most interesting thing is that the amount of variation is exactly that of adult females, even to the presence or absence of ocelli on the long upper tail-coverts. The iris is hazel, the face pale yellow. Male birds of this age average 90 mm. in length of wing; tail, 230 to 290; tarsus, 65; middle toe and claw, 50 mm.

One of the most marked changes from juvenile to adult is the loss of the dotted transverse barring and the acquisition of an even dotting or speckling over the entire web. The female of the first year is hardly distinguishable from the fully adult bird.

Second Year Male.—In most birds of this age there are well-marked characters separating them from older individuals. Such are: the small size of the spurs; less grey on the head and the more impure white of the throat; smaller and darker ocelli, and with the rectrice markings more mottled, less white and clearly defined.

EARLY HISTORY

In the 1758 or tenth edition of his "Systema Naturae," Linnaeus gives the following:

> Pavo bicalcaratus.
> P. capite laevi, calcaribus duobus.
> Phasianus pavonicus chinensis. Edw. av. 67 t. 67 et t. 69, f. 1.
> Habitat in China.
> Pennae verticis revolutae. Pennae posterioris dorsi longae ocellis pavoninis indicant hoc genus.

The reference is to George Edward's "A Natural History of Birds," Part II, published eleven years previously, in 1747. In Plates 67 and 69 we have comparatively good representations of Peacock Pheasants, with two well-marked ocelli on each of the tail-feathers. Plate 67 was drawn in 1745. In addition to this pictorial proof, Edwards states in his description on page 67: "Each feather of the tail hath two beautiful eyes toward their tips, one on each side the shafts of the feathers; so that they stand in pairs. . . ." More conclusive proof than this it would be difficult to adduce, that the bird intended is that from the Indo-Chinese countries, and not from the Malay Peninsula, but throughout the succeeding one hundred and forty-four years no one seemed to realize that this was the case. Hartert ("Novitates Zoologicae," IX. 1902, pp. 538, 539) then called attention to the error. Linnaeus himself clearly indicates what bird he intended in his twelfth edition of 1766, where he adds to his quotations

Brisson's "Ornithologie" of 1760. In Volume I. of this work, under the heading of *Le Paon de la Chine*, Brisson writes of the tail-feathers: "Chaque plume a vers son bout deux taches ovales, scavoir une de chaque côté. . . ." In addition Linnaeus correctly quotes Brisson's other Peacock Pheasant, *Le Paon du Tibet*, as the same bird, the Plate (XXVIII. fig. 2) clearly showing the two ocelli on the tail-feathers.

In 1771 Buffon named this bird *Le Chinquis*, and this initiated the confusion which was to continue for so many years. Five years later, Muller gave this name scientific standing by describing the bird as *Pavo chinquis*, and, almost without exception, recent ornithologists have followed his lead, although Gmelin's *tibetanus*, published in 1788, has had many supporters. This compels us to consider a vast mass of literature as synonymical. *Polyplectron bicalcaratum* is hence the correct name for the northern Peacock Pheasant, having as major synonyms *chinquis* and *tibetanus*.

Returning to Edwards as the first natural historian of the species, we find a remarkably clear account, which indeed was made from the living bird. Some of his remarks are quaint enough to warrant quoting: "This bird is larger than the common pheasant; and though it be called by this name, I take it not to be of the pheasant kind, for the tail is composed of flat feathers, not pointed at their ends, nor bending downwards towards the point, nor hollow on their under-sides, by the inclination of their web, but the feathers are flat, and roundish at their tips, and in walking its tail doth not bend into an arch, as it doth in a pheasant's. See the others described in this book. Though it be a grave-coloured bird, yet it is one of the greatest beauties in nature; one may compare it to sable, thick set with shining jewels of various colours.

"It hath two pair of spurs—which is a thing in this bird more rare and remarkable than all its beauties.

"This bird when I drew it was the property of James Monro, M.D., of London, a most obliging gentleman, of whom I have received many favours. It has since been presented to Lord Orford, and is now living at his house in the Exchequer."

SYNONYMY

Peacock Pheasant from China Edwards, Natural History of Birds, II. 1747, pls. 67 and 69.

Pavo bicalcaratus Linnaeus, Systema Naturae, 1758, p. 156; Linnaeus, Systema Naturae, 1766, p. 268; Griffith, ed. Cuvier, III. 1829, p. 13, pl.

Le Paon de la Chine Brisson, Ornithologie, I. 1760, p. 291.

Le Paon du Tibet Brisson, Ornithologie, I. 1760, p. 294, pl. 28.

L'Éperonnier D'Aubent. Pl. Enl. pl. 492 [male]; Buffon, Hist. Nat. Ois. II. 1771, p. 368.

Le chinquis Buffon, Hist. Nat. Ois. II. 1771, p. 365.

Pavo Chinquis Müller, Supp. to Linn. S. N. 1776, p. 121.

Iris Peacock Latham, Gen. Syn. II. 1783, p. 673; Latham, Gen. Hist. VIII. 1823, p. 118 [part].

Pavo tibetanus Gmelin, S. N. I. 1788, Pt. II. p. 731; Latham, Ind. Orn. II. 1790, p. 617; Bonnat. Tabl. Encycl. Méth. I. 1791, p. 179, pl. 83, fig. 3.

Pavo bicalcaratus Latham, Ind. Orn. II. 1790, p. 617; Shaw, Mus. Lever. 1792, p. 73, pl.

Pavo iris Bonnat. Tabl. Encycl. Méth. I. 1791, p. 178, pl. 83, fig. 2.

Polyplectron chinquis Temminck, Pig. et Gall. II. 1813, p. 363; III. 1815, p. 675 [part]; id. Pl. Col. V. 1831, pl. 17, no. 539; Schinz, Nat. Abbild. Vög. 1833, p. 254; Jard. Nat. Lib. Orn. IV. 1834, pl. vi.; Lesson, Comp. de Buff. VII. 1836, p. 319; Blyth, Cat. Mus. As. Soc. 1849, p. 241; Schinz, Nat. Abbild. Vög. 1853, p. 154 pl. 75; Swinhoe, Proc. Zool. Soc. 1863, p. 307; Sclater, List of Phas. 1863, p. 12; Sclater, Proc. Zool. Soc. London, 1869, p. 628 [Breeding in London Zoo]; Gould, B. Asia, VII. 1871, pl. 50; v. Pelzeln, Ibis, 1873, p. 119; Saint-Hilaire, Bull. de la Soc. d'Acclim., 1873, pp. 191 and 285; Cornély, Bull. de la Soc. d'Acclim. 1874, p. 169; Blyth and Walden, Cat. Mamm. and B. Burma, 1875, p. 148 [Sylhet, Assam, Tenasserim, prov.]; Hume and Inglis, Stray Feathers, V. 1877, p. 40 [Cachar]; Delaurier, Bull. de la Soc. d'Acclim. 1878, p. 591;

Sclater, Proc. Zool. Soc. London, 1879, pl. VIII. fig. 2; Sclater, Proc. Zool. Soc. 1879, p. 116 [Habits in captivity]; Garrod, Proc. Zool. Soc. London, 1879, p. 359 [Trachea]; Godwin-Austen, Proc. Zool. Soc. London, 1879, p. 459 [Habits]; Goodchild, Proc. Zool. Soc. London, 1886, p. 193 [Cubital coverts]; d'Aubusson, Bull. de la Soc. d'Acclim. 1887, p. 432; Godry, Bull. de la Soc. d'Acclim. 1888, p. 49; Delaurier, Bull. de la Soc. d'Acclim. 1888, p. 1143; Delaurier, Bull. de la Soc. d'Acclim. 1889, p. 598; Delaurier, Bull. de la Soc. d'Acclim. 1891, pp. 41, 42; Evans, Ibis, 1891, p. 77 [Length of incubation]; Grant, Cat. Game-birds Brit. Mus. XXII. 1893, p. 354 [Synonymy and description]; Blaauw, Der Zool. Garten, XXXV. 1894, p. 248 [In captivity]; Grant, Hand-book Game-birds, II. 1897, p. 61 [Description and habits]; Nehrkorn, Katalog der Eiersammlung, 1899, p. 194 [Egg]; Heinroth, Jour. für Orn. 1900, p. 247; Fauque, Bull. de la Soc. d'Acclim. 1907, p. 115 [Term of incubation]; Pocock, Avic. Magazine (2), 1910, p. 229; Pocock, Avic. Magazine (3), II, 1911, p. 229 [Display]; Mitchell, Proc. Zool. Soc. London, 1911, p. 522 [Longevity in captivity]; Seth Smith, Proc. Zool. Soc. London, 1912, p. 557.

Diplectron tibetanus Vieillot, N. Dict. d'Hist. Nat. X. 1817, p. 313.

The Tibet Peacock Latham, Gen. Hist. VIII. 1823, p. 120.

Diplectron bicalcaratus Vieillot, Gal. des Ois. II. 1825, p. 17 [part], pl. 203; Schinz, Nat. Abbild. Vög. 1833, pl. 93.

Polyplectron albocellatum (Temm.) Cuvier, Règ. Anim. I. 1829, p. 474; Griff. ed. Cuvier, III. 1829, p. 13.

Polyplectrum albo-ocellatum Lesson, Traité d'Orn. 1831, p. 487.

Polyplectron tibetanus Jardine, Nat. Lib. Orn. IV. 1834, p. 161.

Polyplectron tibetanum Gray, Gen. B., III. 1845, p. 495; Elliot, Mon. Phas. I. 1872, pl. 6; Hume and Marshall, Game-birds of India, I. 1878, p. 105, pl.; Hume and Davison, Stray Feathers, VI. 1878, pp. 432, 521; Fasson, Stray Feathers, IX. 1880, p. 203 [Chittagong]; Oates, Birds Burmah, II. 1883, p. 315; Hume, Stray Feathers, XI. 1888, p. 300 [Manipur, Arrakan]; Cripps, Stray Feathers, XI. 1888, p. 301 [E. Assam]; Hartert, Kat. Mus. Senckenb. 1891, p. 198.

Polyplectron atelospilum Gray, List Gallinae Brit. Mus. 1867, p. 24 [Laos Mountains]; id. Hand-list of Birds, II. 1870, p. 257.

Polyplectron cyclospilum Gray, List Gallinae Brit. Mus. 1867, p. 23 [N.E. India]; id. Hand-list of Birds, II. 1870, p. 256.

Polyplectron enicospilum Gray, List Gallinae Brit. Mus. 1867, p. 24 [N.E. India]; id. Hand-list of Birds, II. 1870, p. 257.

Polyplectron bicalcaratum Swinhoe, Proc. Zool. Soc. 1871, p. 398 [S.W. China]; Stuart Baker, Jour. Bomb. Nat. Hist. Soc. Vol. XXIV. 1916, No. 2, p. 209, pl.

Polyplectron intermedius Hume, Stray Feathers, I. 1873, p. 36 [Looshaie country], and V. 1877, p. 118; Elliot, Ibis, 1878, p. 124.

Polyplectron thibetanum Hume and Davison, Stray Feathers, VI. 1878, pp. 432, 521 [North and Central Tenasserim]; Bingham, Stray Feathers, IX. 1880, p. 195 [Thoungyeen Valley and Sinzaway]; Oates, Birds Burmah, II. 1883, p. 315 [Arrakan].

Polyplectrons Misselbrook, Proc. Zool. Soc. 1879, pp. 116, 117 [Habits in captivity].

Polyplectron helenae Oates, Ibis, 1883, p. 136, pl. v. (Immature) [Upper Burma]; id. Birds Burmah, II. 1883, p. 316.

Éperonnier Chinquis Godry, Bull. Soc. d'Acclim. 1888, p. 985.

Polyplectrum chinquis Blanford, Fauna Brit. India, Birds, IV. 1893, p. 73; Oates, Game-birds, I. 1898, p. 233; Baker, Jour. Bomb. Nat. Hist. Soc. XII. 1899, p. 486 [North Cachar]; Inglis, Jour. Bomb. Nat. Hist. Soc. XII. 1899, p. 676 [Hylakandy Dist. Cachar]; Sharpe, Hand-list of Birds, I. 1899, p. 39; Stuart Baker, Jour. Bomb. Nat. Hist. Soc. XVII. 1905, p. 971; Harington, Jour. Bomb. Nat. Hist. Soc. XIX. 1909, p. 309 [Bhamo Dist. Burma]; Harington, Jour. Bomb. Nat. Hist. Soc. XX. 1910, p. 377 [Bhamo]; Venning, Jour. Bomb. Nat. Hist. Soc. XXI. 1912, p. 332; Hopwood, Jour. Bomb. Nat. Hist. Soc. XXI. 1912, p. 1214; Gairdner, Jour. Nat. Hist. Siam, Vol. I. 1915, No. 3, p. 151.

Polyplectron bicalcaratus Hartert, Novitates Zoologicae, IX. 1902, p. 539.

Polyplectron bicalcaratus chinquis Stuart Baker, Jour. Nat. Hist. Soc. Siam, Vol. IV. 1920, No. 1, p. 33.

GERMAIN'S PEACOCK PHEASANT

Polyplectron bicalcaratum germaini Elliot

NAMES.—Specific: *germaini*, after M. Germain, who sent the first specimen from Cochin China. English: Germain's Peacock Pheasant. German: Destlicher Spiegelpfau. French: Chinquis or Eperonnier de Germain.

TYPE.—Locality: Cochin China. Describer: D. G. Elliot. Place of Description: Ibis, 1866, p. 56. Location of Type: Paris Museum.

BRIEF DESCRIPTION.—Male and Female: Similar to the Grey Peacock Pheasant, but generally darker, with the ocelli more numerous and brilliant. The whites less developed and the facial skin red rather than yellowish.

RANGE.—Cochin China and Siam, merging in the latter country with the typical northern *bicalcaratum*.

GENERAL ACCOUNT

I HAVE had no opportunity of observing this species in a wild state. From the vicinity of Bangkok I have specimens grading from extreme *bicalcaratum* to full-plumaged *germaini*. So that while Assam birds and those from Cochin China easily represent differences of specific value, yet intergradation requires us to reduce them to subspecific rank. Indeed all the characters of both males and females which have been supposed to differentiate *germaini* may occasionally be found in individual birds from Burma.

Germain's Peacock Pheasant is a highly melanized and intensely coloured extreme of the northern form. This might be expected from the hot and humid character of its haunts. The general plumage is darker, the whites being reduced in clearness and extent. The ocelli are more numerous and brilliant in both sexes, and the flesh colours are more intense. In the description of the type specimen of *germaini* the words *gula alba* show how unstable is this character which is supposed to distinguish *bicalcaratum.*

Almost nothing has been recorded of the wild bird. M. Germain, who discovered the species, writes as follows from Cochin China: "It is found principally in the mountains of wooded regions, and is most abundant in the mountains near the Porte Ka-ou-Ty-Vai, in the province of Bien-Hoa. It is not found near Saïgou; however, the Amarnites bring some at times, which they have taken in snares where the *P. praelatus* (Siamese fire-back) is found."

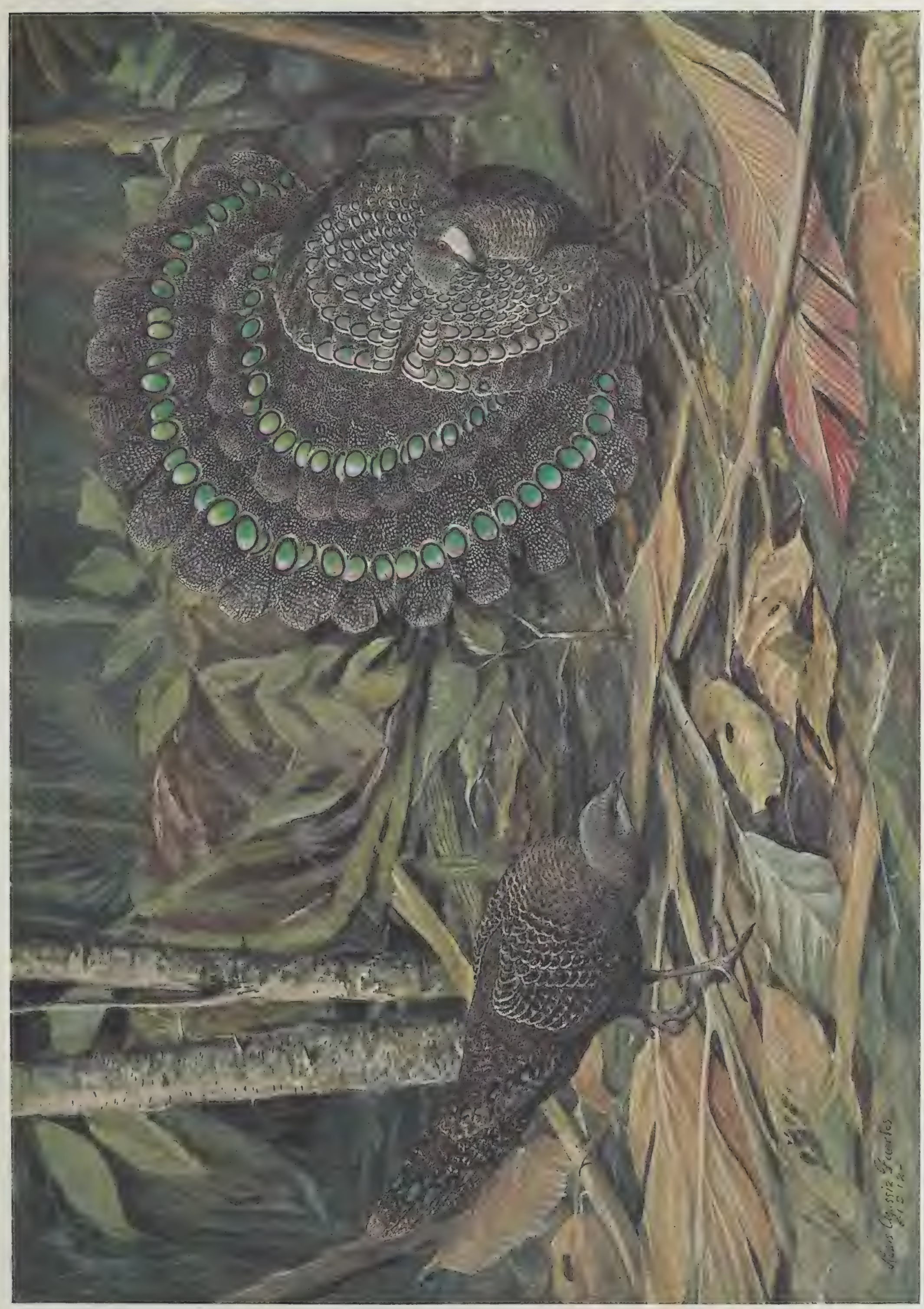
It is not uncommon in captivity, and has been bred a number of times. The period of incubation is twenty-one days, while the number of eggs and the habits in general are identical with those of the Grey Peacock Pheasant. It is more sensitive to cold and less hardy, however, and never so prolific, eight eggs in four layings being the maximum obtained from a single hen in a season. Of six birds which have lived in the London Zoological Gardens, one lived four years lacking a month, the average length of life being a year and ten months.

GERMAIN'S PEACOCK PHEASANT

Polyplectron bicalcaratum germaini Elliot

Where the Peacock Pheasants extend their range southward through Siam into the humid, semi-tropical forests of Cochin-China, they become darker in general coloration, with the eyed spots more intense and brilliant. The transition is gradual, so that while the two extremes are quite distinct, it is possible to separate them only sub-specifically. In habits and nesting they are identical.

PLATE LXXVII.



GERMAIN'S PEACOCK PHEASANT.

DETAILED DESCRIPTION

Adult Male.—As a whole much darker than in the northern form. Top of head, nape and upper neck of loose-barbed, black feathers with indistinct white markings, chiefly in the form of a shaft-streak or spot, and a terminal or sub-terminal band. On the lower dorsal neck, where the feathers become somewhat more firm, fine concentric transverse bands of white are visible. Abruptly on the mantle appear fully-developed ocelli, of a dark, lustrous green, changing to a rich purple. These cover the entire mantle, scapulars, wing-coverts and tertiaries. The rest of these feathers are dark brown, irregularly but thickly dotted with small roundish buff spots. The iridescent ocellus is surrounded by a narrow ring of black, then another of the dark brown feather-background, while the buff spots coalesce around the distal third of the ocellus to form a solid band.

The ocelli are well developed usually up to the 7th from the outer secondary, while on the 6th and 5th there are abortive vestiges. The remainder are unornamented save for more or less spotting on the outer web or margin, while the primaries are plain dark brown.

On all the long upper tail-coverts and on all the rectrices twin ocelli are developed, surrounded first by a dark ring and then a wider one of ashy brown.

The chin is white, but the throat, sides of the face and neck usually have the same pattern as the crown, the feathers being black with a spot or V-shaped shaft-mark and a sub-terminal band of white.

The buff markings of the ventral surface form fairly regular bands on the upper breast, but posteriorly these disintegrate into an irregular mottling, the very dark brown or almost black ground holding true throughout the plumage.

In unusually full-plumaged adults it is interesting to note that well-marked traces of ocelli are found scattered over the lower back and even on the upper rump. Usually these are only more or less distinct, reddish-buff, sub-terminal blurs, but here and there a core of black pigment appears, or even a diminutive but perfect, iridescent green, ocellus.

The tail-feathers are usually twenty in number. I have never found twenty-four and the intermediate number only five times. In some specimens there is a decided reduction in the size, perfection and gloss of the ocellus on the inner web of the outer tail-feathers, very decidedly hinting of the condition in the more southern *malaccensis*. The general dimensions are the same as in *bicalcaratum bicalcaratum*, but the fleshy colours are more intense, the facial skin sometimes approaching scarlet.

Adult Female.—Of a general darker colour than is usual in *bicalcaratum*, with the ocelli more highly developed.

Head and neck much as in the adult male, with the crown feathers shorter and less disintegrated. Mantle dark brown, vermiculated with paler buff. There are fewer ocelli on the lower mantle and wings than in the male, and they are more degenerate. Anteriorly they are little more than black pigment spots, showing an increase of central greenish gloss as we proceed backward, until on the longest scapulars and wing-coverts they reach their fullest development. Everywhere they are characterized by a short, distal point, making them very broadly arrow-shaped instead of round, the solid buff line following this oblique outline.

On the upper tail-coverts the ocelli are usually rather abortive, showing but a small patch of green, but as we proceed outward on the rectrices they gain in size and definiteness, until they differ from the corresponding spots on the rectrices of the male only by lacking the outer ashy-grey circle. The spotting on the lateral rectrices is greatly reduced. The bird as a whole gives the impression of being vermiculated rather than spotted. The fleshy colours are more intense than in the female of the other form. The tail-feathers are usually twenty in number, but twice I have found eighteen to be the full complement.

Immature Female Moulting from Juvenile.—In this individual the head and neck, including the throat, show more white. The ocelli have little trace of green gloss, being, on the whole, dull black with a broad, terminal, mottled, buff border. A number of juvenile greater wing-coverts still remain, bordered with rufous chestnut. The spotting on the rectrices is in the form of quite definite, regular cross-bars.

All the plumage, and especially that on the ventral surface, has less vermiculation, the lower breast and belly being clear brownish black.

EARLY HISTORY

In 1866 M. Germain sent the skin of a male Peacock Pheasant to the Paris Museum from Cochin China, and by the courtesy of M. Verreaux it was given to Dr. Elliot, who named it in honour of its discoverer.

SYNONYMY

Hen Peacock Pheasant from China, Edw., Nat. Hist. B. II. 1737, pl. 69.

L'Éperonnier D'Aubenton, Pl. Enl. pl. 493 (Female).

Polyplectron germaini Elliot, Ibis, 1866, p. 56; Vekemans, Der Zoologische Garten, 1870, p. 265; Elliot, Mono. Phas. I. 1872, pl. 8 (Bien-hoa, Cochin China); Hume, Stray Feathers, VII. 1878, p. 426; Hume and Marshall, Game-birds India, I. 1878, p. 111; Noenty, Der Zoologische Garten, 1884, p. 56 (Breeding); Delaurier, Bull. Soc. d'Acclim., 1890, p. 237; Grant, Cat. Birds Brit. Mus. XXII. 1893, p. 357; Grant, Hand-book Game-birds, II. 1897, p. 64; Sharpe, Hand-list Birds, I. 1899, p. 39; Hartert, Novitates Zoologicae, IX. 1902, p. 539; Mitchell, Proc. Zool. Soc. London, 1911, p. 522; Ghigi, Rev. Ital. Orn., I. 1912, p. 270.

Polyplectron intermedius Hume, Stray Feathers, I. 1873, p. 36; Hume, Stray Feathers, V. 1877, p. 118.

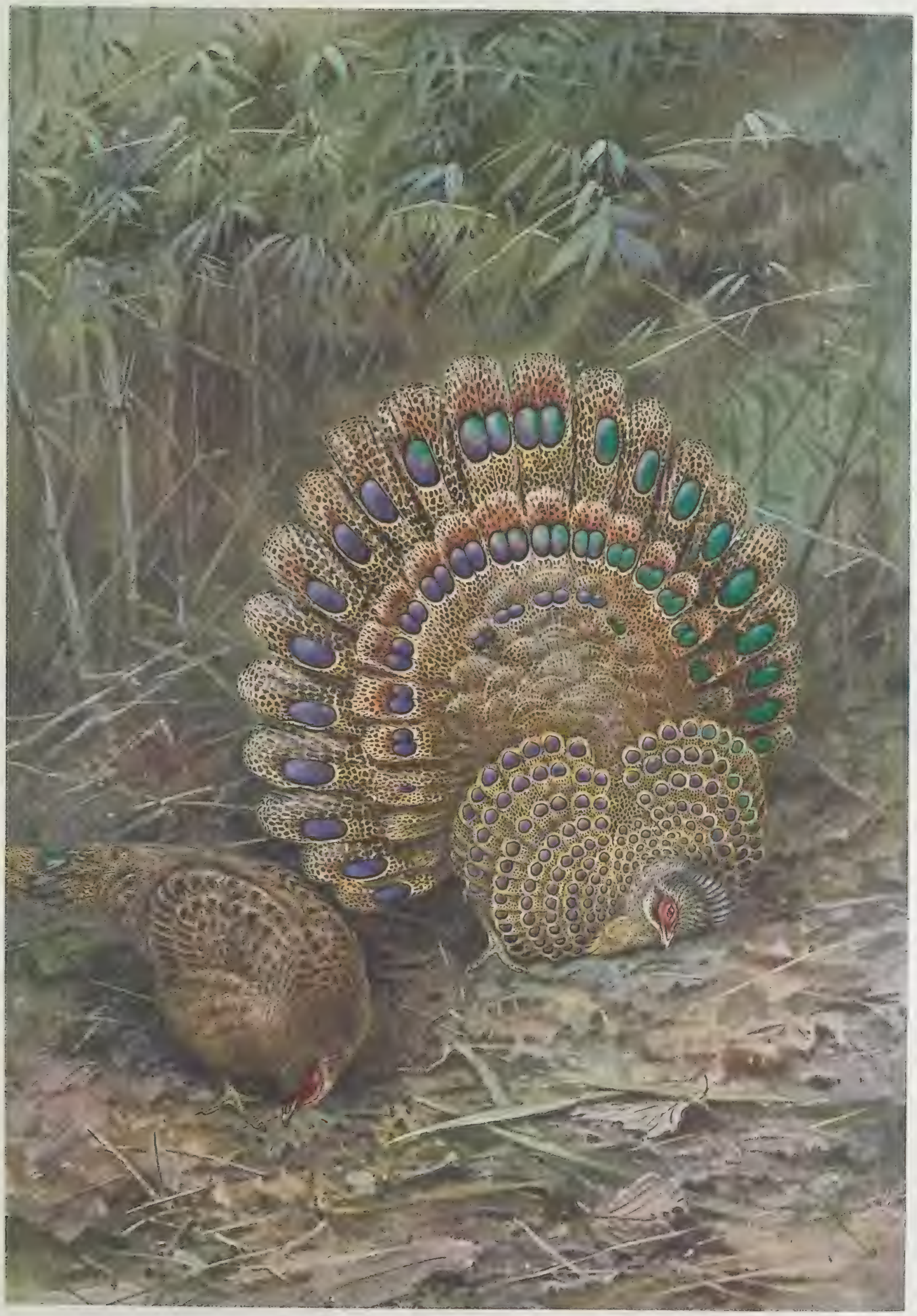
Éperonniers de Germain Godry, Bull. Soc. d'Acclim. 1888, pp. 52, 983.

Polyplectrum intermedium Oates, Game-birds, I. 1898, p. 234. [Lushai Country.]

MALAY PEACOCK PHEASANT

Polyplectron malaccensis (Scopoli)

Many decades will pass before the last Malay Peacock Pheasant is driven from its haunts. It is guarded so well by a host of tropical terrors, which rise at every foot and dispute one's advance into its realm, that until the last mile of fever swamp is drained and the last valley cleared of its leech-filled underbrush these pheasants will exist, skulking through the jungles and carrying on their small businesses of life hidden from all save the lowly forest folk. It is a land of dreadful silences, filled with gorgeous birds and butterflies, where man alone finds life unbearable.



MALAY PEACOCK PHEASANT.

MALAY PEACOCK PHEASANT

Polyplectron malaccensis (Scopoli)

NAMES.—Specific: *malaccensis*, of Malacca. English: Malay or Crested Peacock Pheasant. German: Gehäubter Spiegelpfau. French: Chinquis or Éperonnier huppé. Native: Kuan chĕrmin (Mirror pheasant), kuang ranggas (dry brushwood pheasant), kuang bulan (moon pheasant), kuang ranting (twig pheasant), kuang pongsu (ant-hill pheasant), mĕrak pongsu (ant-hill peacock): All Malayan; kuan is typical of southern Malaya, and kuang of the more northern tribes.

TYPE.—Locality: Ind. orient. Describer: Scopoli. Place of Description: Del. Flor. et Faun. Insubr. 1786, pt. II. p. 93.

BRIEF DESCRIPTION.—Male: Crest glossed with green; bars on neck with some violet; upper plumage dark cinnamon buff, dotted with black; ocelli on mantle, wings and tail green changing to purple; longer tail-coverts and central rectrices with confluent double ocelli; other tail-feathers with only one ocellus on outer web; facial skin red. Female: Upper parts buff, mottled with black, ocelli on mantle and wings, spots of dull black; green ocelli on tail-coverts and tail as in male.

RANGE.—Malay Peninsula and Sumatra.

THE BIRD IN ITS HAUNTS

MANY decades will pass before the last Malayan Peacock Pheasant is driven from its haunts. It is guarded so well by a myriad tropical terrors which rise at every foot and dispute one's advance into its realm, that until the last mile of swamp is drained and the last valley cleared of the underbrush these birds will exist, skulking about in the underbrush and carrying on their small business of life hidden from all save the lowly jungle folk.

While by no means the rarest, yet this proved to be one of the most difficult of the Malay pheasants to locate. Day after day we gave up to its search, finding now and then a feather to keep up our hope, but taking many weary tramps to places where the natives said it was common, only to find not the slightest trace. It was when I took to tracking by myself that success came, and even then I had to fight my way and suffer much for even a brief glimpse of the splendid birds.

Half-way down the Pahang River, over the divide in Pahang itself, a small stream enters from the north-east—the Sangei Tikham. Poling with difficulty against the swift current—for the rains had set in—I passed through a maze of thousands of white, feathery blossoms, alternating with impenetrable thickets of thorny rotans. Long-tailed monkeys were abundant, often crossing overhead by a leap of several yards.

Leaving the house-boat, I crossed a wide animal trail and plunged into the high jungle. Here I roamed for days, and here I found the Malayan Peacock Pheasant in fair numbers.

It was a land of dreadful silences. When the sky was overcast, an hour would sometimes pass with almost no sounds of life. When I left the stream I would walk rapidly and silently over the sodden ground until I reached some small open space or a large fallen tree. For I could not stand for long in one spot, on account of the leeches. These little fiends were legion, and no subtle binding of tight puttees served to keep them out.

Once when I knew that a pheasant was somewhere near by, I crouched waiting among the undergrowth. In five minutes, although not a breath of air stirred, yet every leaf near me was a-quiver. Hundreds upon hundreds of the tiny thread-like forms were coming toward me from all directions. A score were upon my shoes; I could feel the tremor of many looping along the brim of my topee. One began to feel for a hold on my neck. Finally, nature could stand it no longer, and I dashed to the nearest log and freed myself from as many as possible. Several always succeeded in reaching their goal, and day after day I would return with shoes and stockings soaked with blood. These birds were indeed the real blood pheasants.

While I waited for the birds which I knew came daily to scratch and feed near the banks of a small stream, I watched one of the leeches. From my puttee I flicked it upon the log, as it happened, to windward of me. Instantly it stood straight upright—a sinister, mottled form like no other living creature I have ever seen. Bending down I blew gently toward it. Like a flash the sensitive bulb which does duty as a head began to quiver, and once on the right scent it began cautiously to loop in my direction. Every loop brought the scent to it stronger; faster and faster it came until it seemed almost to circle over the surface of the log. It reached me, and I stood upon it with my full weight, but, tough as a bag of leather, it rolled out unhurt. Then a scurry of squirrels distracted my attention and I left the log.

Besides leeches, this pheasant is guarded from intruders by noiseless mosquitoes and pestiferous sand-flies, which make continued quiet watching very arduous and at times impossible.

But after a long, silent walk, with no pheasant or other bird or beast to hold my interest, a sunny glade was sometimes encountered and a sudden burst of song and a crowd of jungle creatures was my reward.

One such windfall which, I remember, was concealed until the last moment by a thick tangle of low palms, so that my entrance was made suddenly, without caution. I was disappointed to see two Peacock Pheasants running swiftly toward shelter. Had I come quietly upon them I might have seen much of interest, for they appeared to have been fighting. Many feathers were scattered about a clearing where ground ginger was in full bloom, and there were even a few drops of blood, although, from the swift escape of the birds, I judged that little harm had been done.

Finding a comparatively leechless spot among the low palms I waited and watched.

The beauty of the glade was a bee-eater, green as the leaves themselves, except for a wonderful frontal cap of lilac and head and breast of scarlet. A great squirrel—gaudy as a butterfly in white, black, maroon and buff, crashed through the branches from tree to tree—and then the leeches found me. But I was not going to give up yet, so I crouched on my heels, native fashion, and marked out a dead line, or rather dead circle. Every leech which crossed that mark was dropped into a bottle of alcohol for a leech-desiring scientific friend who had never had his enthusiasm dampened by a study from the life! The bee-eater swooped to a low perch and wiped his beak on a twig, when something ran out and made a threatening motion at him. The bee-eater took hurriedly to flight, and I saw that the aggressor was a Malay Peacock Pheasant. Whether one of the former pair of combatants, I had no means of knowing. No further signs of aggressiveness was observed. The bird, alert as the wildest of wild things, walked slowly close to the edge of the glade, and coming to a log half sunk into the mould, began pecking and scratching vigorously. What would ground birds do without the everlasting termites which all feathered creatures seem to enjoy so much, and whose long-suffering colonies are so readily accessible? Soldiers and workers alike are eaten, although I have found stray heads with jaws fixed firmly into the crops of these birds, showing that the brave militia had died fighting.

A large gourd-like fruit fell crashing to the ground near by. The drongos ceased their tree-top dance, and a tupaia fled away into the jungle at frantic speed. The pheasant stretched its neck high, cackled, looked in every direction for a moment and went on with its feeding.

The usual thing finally happened to me: a family of babblers found me out and shrieked their discovery to the world, father, mother and children all joining in the outcry. The Peacock Pheasant hardly waited to glance in my direction, but slipped away into the jungle shadow. Again in my pheasant study did I realize with what certainty the wild creatures interpret the sounds they hear. The crashing of a gourd as of a cannon-ball falling to earth is hardly noticed—it marks a natural and harmless jungle happening—but a cry of warning, though from a member of an unrelated group of birds, is recognized and acted on without hesitation. I told the babblers what I thought of them and how well they were named, but they had the last word, as usual, and long after I had left the glade I could hear the chorus of triumph and the babble of tongues tearing my character to shreds in the depths of the jungle. And as I turned back toward the river a band of gibbons took up the jubilation, and laughed and jeered high up in the tree-tops. A white Sahib had dared to enter the depths of the jungle, and was now retreating! If one could only explain that they ought all to be thankful that I was a Sahib using a field-glass more often than a gun. Only the pheasants were silent, listening somewhere deep among the leech-infested undergrowth.

GENERAL DISTRIBUTION

The Malay Peacock Pheasant is essentially a bird of the lowland jungle, seldom ascending the bukits even to a moderate height, although I once saw a single bird at about a thousand feet. Its place at higher altitudes is taken by the Malay bronze-tailed pheasant. Its northern limit is probably about 8° N. Lat., not far from Salang or Junk-seylon Islands. It is also found in the mountains of Sumatra.

GENERAL ACCOUNT

As is the case with so many birds of the dense, humid, tropical jungles, the life history of this bird is almost wholly unknown, and many weeks of hard search revealed to me sidelights which served only to whet my desire to know more. I have already told of the difficulties of watching in these leech-filled jungles.

Whenever I encountered these pheasants it was in some striking situation—clearly marked in memory by the presence of unusual creatures of the jungle, or some strange physical environment. And so I came gradually to set them apart from their brethren whom I had seen in Burma and elsewhere, skulking fowl-like, or seen in other uninspired positions. And, as is almost the rule in such study, my most interesting facts came by accident.

Deep in the hinterland of Pahang, following devious trails and led by savages who seemed half Malay, half Sakai, I reached one day some wonderful limestone caverns deep in the jungle. The long morning's walk had led along narrow, almost invisible, animal trails with the fronds and branches reeking with moisture flicking our faces; the air hot, saturated and heavy with the beloved odours of primal nature; the rich smell of moist mould and dripping fungus, the heavy, almost sickening sweet perfume from some tangled mass of unnamed bloom; the keen-edged scent of mating insects, the sharp musk of a fleeing civet. All these hold the interest in the dense jungle, as keenly as do the sights and sounds of more open forest glades. Every hundred yards we stopped to dislodge the leeches, my guides with stick or fingers, I with a pair of forceps which I found more effective.

At the entrance to the cave I found a barrier in the dry, loose sand, the lime-saturated water and the bat guano, which even the leeches could not cross. Beyond this was a cool, peaceful haven—a great, columned, cathedral-like entrance, rising majestically from the jungle floor, and through the cool dusk of its interior showing glimpses of other openings, distant bits of green foliage, the lights and shadows filtered and toned down as through stained-glass windows. Lofty balconies and arcades extended partly around the cavern, as convenient to reach and comfortable to traverse as though fashioned by human forethought. Leaning over the balcony were gargoyles and motionless spectators, stalactite moulded, here a hideous half serpent, half bull, there an aged man bent and attentive. Could he speak, what tales he could tell of the scenes enacted in the wide expanse of cavern—by night and by day—through all the ages!

The cave abounded with interesting hints of lives which had been led within its shelter. The oldest characters on this palimpsest were of the wild nomadic Sakies. Traces of their fires were visible, and far up, in small crevices, to be reached only by a man's hand and arm, were many packages bound up in skeleton leaves, which once had been thick and green. Within were numbers of bones of many creatures—monkey skulls, both the large wa-was and the lesser four-handed folk; mouse-deer, carnivores and many small animals—all the remains of feasts, preserved thus by the mandate of some religious or other rite. More recent were the elephant tracks, and on a flat boulder was the remains of a tiger's meal—part of the skull and shoulder-blade of a wild boar. Along the cliffs partly outside the cave were deep, narrow crevices running far in out of sight, and at the entrance of these crannies were terminal moraines of feathers of small birds and the fur and bones of rodents—the remnants of many meals of fierce musangs or civet cats, and other small carnivora. Still farther away on the jungle edge were piles of broken and cleaned-out land shells, some of large size. These accumulated shells were found also scattered about in the jungle near by, and I frightened away several large, brown hawks from them, showing at least one collector of mollusks. Indeed, I believe these birds were the gatherers of all, for in the course of several days' observations I saw

ROOSTING- AND FEEDING-PLACES OF THE MALAY PEACOCK PHEASANT

Deep in the Pahang jungles, following devious trails and led by savages, half Malay, half Sakai, I reached some wonderful limestone caverns. In the interstices pheasants roosted, and at the entrance small hawks brought snail-shells from the jungle, which they broke and devoured. Then followed flies and their maggots, and these in turn attracted the pheasants, which found this a plentiful and ever-renewed feeding-ground.

ROOSTING AND FEEDING PLACES OF THE MALAYAN PEACOCK-PHEASANT

three hawks fly to this general feeding-ground, each with a shell in its claws, there to break it open or at least to tear out the inmate and devour it.

It was in relation to these snail-shells that the Peacock Pheasant came into the picture, and from concealed points of vantage I saw as many as five birds at once, feeding in the snail zone. This occurred several days in succession, so there was a certainty as to its being a regular habit. Once, and once only, I saw a bird carrying a shell in its mouth, but only to save it from being seized by another. Fortunately I had learned by experience not to jump too quickly at conclusions, and instead of writing in my journal that the Malay Peacock Pheasants showed a strong partiality for mollusks, I watched them carefully with my most powerful binoculars, recorded my suspicions, and then confirmed these by shooting two birds and examining their mouth, œsophagus and crop. They were feeding merely on the fly larvæ and pupæ which filled the shattered shells, the cause of this being the bits of decaying mollusk tissue still adhering to the whorls.

Here again was another instance of unconscious interrelation of jungle creatures; the babblers unintentionally posing as the best friends of these birds; the hawks all unknowingly bringing daily manna to their pheasant brethren.

Whether because of the season or not, I saw these pheasants usually in pairs, the group of five being unique and not equalled on any other occasion. Although wary, and ready to dash out of sight at the least hint of danger, they recovered much more quickly than birds more accustomed to the dangers from human beings. Gunshots can mean nothing to them, and although both the Sakais and Malays trap them, this could not spread fear through the race, nor could it be connected by them with the two-legged creatures who occasionally passed through their haunts. The almost complete restriction of travel to the waterways is another factor keeping the terror of mankind from them. Whenever I frightened away a bird from a feeding-place, I could feel certain that by waiting a short time it would return, and give me opportunity of observing it as long as I could resist the torture of the leeches and the biting insects.

I never saw one of the birds in the act of crowing, but from very strong circumstantial evidence I can say that the voice resembles that of the grey peacock pheasant, but is still louder and more raucous, and uttered in early morning. At least I have never heard it either at mid-day or in the cool of the afternoon. It escapes always on foot, and the only time I ever saw a wing spread was when a bird scaled to earth from its perch upon a swaying liana on the opposite side of a glade, where it had been crowing for many minutes.

CAPTIVITY

This species reached Europe alive at least as early as 1870, and probably much earlier, and has since then been bred a number of times, depositing two eggs at each laying, and in all other respects differing in no way from its more common congeners. There is a record of one of these birds living almost three years and a half. I captured several alive, and had no difficulty in keeping them in health in Singapore on a diet of rice and other grain.

DETAILED DESCRIPTION

Adult Male.—Elongated crest, growing from the forehead and fore crown, of slender, stiffened, decomposed feathers, the longest 70 mm. in length. The distal two-thirds are shining green, the basal third banded black and white. The feathers of the hind crown, hind neck and mantle are markedly recurved, in fact convex, as both the edges of the decomposed webs as well as the extremities are curved upward. These feathers are white, spotted and, on the distal half, irregularly banded with dark chocolate brown, with a wide terminal band of the same colour. When the bird is held with the head pointing away, and these feathers are looked at obliquely, they seem of a uniform dark brown and white, but when viewed from directly above at a right angle, the terminal band and many of the more proximal bands and spots glow with a beautiful violet iridescence. On the shorter nape feathers this hue appears almost solid; but on the mantle only as a terminal fringe on the upturned extremities of the feathers. There is great variation in the amount of this colour, which is evidently a recent acquisition, as some male birds which are fully adult in all other respects almost lack the violet.

In general the Malay Peacock Pheasant may be said to be cinnamon buff, of a rather dark shade. The ocelli are very abundant on the mantle, scapulars and coverts, and are well set off by a narrow black ring and an equal area of solid buff. The remainder of the dorsal plumage may be described as creamy or cinnamon buff, spotted thickly with black, the spots becoming larger and finally confluent on the basal part of the feathers. The ocelli are large and brilliant on the tertiaries and on the secondaries, usually up to the 9th, 8th or 7th, on one of which only the half ocellus on the outer web is present. The remaining eight, seven or six secondaries show no trace of ocelli. The general colouring is reversed, the black or brownish black being dominant, and the buff reduced to markings at the tip and outer margins of the vane, while basally it is reduced to sparse vermiculations and finally dies out altogether. The primaries are plain brown.

The back, rump and shorter tail-coverts are densely vermiculated with buff, darker than elsewhere, and pale shaft-streaks are present. These all lack ocelli, which make their appearance again on the longer tail-coverts. Here and on the central rectrices they are double, as elsewhere, but with strong hints of a separation, by way of the deep notch at the proximal margin. On all the lateral rectrices the inner half or ocellus has vanished, leaving no trace whatever, the ocellus on the outer web remaining perfect and symmetrical.

Distally to the ocelli on the longest upper tail-coverts and the rectrices a strong tinge of rufous chestnut colours the webs. The spotting over all the surface of the feather is very strong, restricting the rather pale buff background to a mere network.

The facial area has only a scattering of short featherlets, while the lower cheeks and back over the ear-coverts form an elongated triangular patch of black feathers, glossed with green. Chin and throat white. Breast and under-parts brownish black, with the breast conspicuously spotted and banded with whitish buff, which, on the remaining under-parts, becomes more creamy buff, and changes to a finely vermiculated pattern.

The iris is almost white; facial skin orange, increasing in intensity at the breeding season; bill black, lower mandible somewhat paler horn; feet and legs black.

Length, 520 mm.; bill from nostril, 14; wing, 200 to 215; tail, 300; tarsus, 70;

middle toe and claw, 50 mm. Spurs usually two on each leg, sometimes three on one or both ; stout and not very long, seldom over 13 mm.

Adult Female.—Of a decidedly more buffy hue than *Polyplectron b. bicalcaratum*, otherwise very similar.

Head and neck uniform dark brownish black, with paler centres to the feathers. Chin and throat dirty white. Upper mantle and under-parts vermiculated and banded with dark brown. Lower mantle and wings olive buff, vermiculated with dark brown and with irregular, rather pointed, black ocelli. Above this is a small irregular shaft-spot of clear buff. The ocelli die out gradually on the secondaries, which are vermiculated with buff on the outer webs and finally only on the outer margins, while the primaries are plain brown. Back and rump, like wings, lacking ocelli or with only the vaguest traces. Ocelli much more highly developed on the longer tail-coverts and rectrices, the lateral rectrices with only the outer ocellus as in the male.

Fleshy colours as in the male. Length, 430 mm. ; bill from nostril, 11 ; wing, 190 ; tail, 160 ; tarsus, 58 ; middle toe and claw, 45 mm. Spurs represented by a low, rounded scalule.

First Year Plumage Male.—A series of birds of this age shows great variation in the general relation to the adult plumage, partly due to a large number of new adventitious feathers replacing others torn out, in part to actual intra-feather variation due to the more retarded or advanced condition of the pigment in the blood at the time of the post-juvenile moult.

A male shot in May has not yet shed all the juvenile plumage. In this specimen the juvenile plumage on the top of the head and neck is pale warm brown, the crown feathers hardly longer than the others. Chin, breast and under-parts a colder dark brown, vermiculated with greyish buff. Some of the inner secondaries and coverts are juvenile, and strongly tinged with rufous. Ocelli on the lower mantle and wings, irregular spots of black, the rest of the feather predominately light buff, mottled and vermiculated with dark brown. A slight gloss appears on some of the larger ocelli. Lower back and rump same as the wings, but without ocelli, many of the feathers having instead a black-bordered, sub-terminal spot of solid buff. The tail-feathers, twenty-two in number, are juvenile, narrow, pointed and curved, with no hint of ocelli. They are brownish black, strongly barred with seven to thirteen buff cross-bands.

In more advanced post-juvenal males the head is darker, the ocelli are more perfect, the general plumage more spotted and the relative length of the tail greater in proportion as the plumage is more adult. The ocelli on the longer tail-coverts and rectrices are fairly well developed, the arrangement being exactly as in the adult. Faint buff markings on these feathers are in the form of irregular cross-bars. The spurs are quite well developed.

SYNONYMY

Le petit Paon de Malaccà Sonn. Voy. Ind. Orient. II. 1782, p. 173, pl. XCIX.
Phasianus malaccensis Scop., Del. Flor. et Faun. Insubr. 1786, pt. II. p. 93.
Polyplectron chinquis Temminck (nec Müll.), Pig. et Gall. II. 1813, p. 363, III. 1815, p. 675 [part].
Pavo bicalcaratus Raffles, Tr. Linn. Soc. XIII. 1822, p. 319 [Sumatra].

Iris Peacock Latham, Gen. Hist. VIII. 1823, p. 118 [part].

Diplectron bicalcaratum Vieillot, Gal. des Ois. II. 1825, p. 17 [part].

Polyplectron bicalcaratum Vigors, in Raffl. Mem. 1830, p. 676 [Sumatra]; Temminck, Pl. Col, V. Éperonnier, 1831, pp. 2, 6; Less. Comp. de Buff. VII. 1836, p. 321; Gray, List of B. Pt. III. Gall. 1844, p. 22; id. Gen. B. III. 1845, p. 495; Blyth, Cat. Mus. As. Soc. 1849, p. 242; Sclater, List. of Phas. 1863, p. 12, pl. 12; Fitz., Atl. Nat. Vög. 1864, fig. 225; Gray, List Gallinae Brit. Mus. 1867, p. 23; id. Hand-list of Birds, II. 1870, p. 256; Gould, B. Asia, VII. 1870, pl. 51; Vekemans, Der Zoologische Garten, 1870, p. 265 [Breeding in captivity]; Elliot, Mon. Phas. I. 1872, pl. 7; Hume, Stray Feathers, II. 1874, p. 481 [Tenasserim]; Hume and Davison, Stray Feathers, VI. 1878, p. 434 [? Hills of S. Tenasserim]; Hume and Marshall, Game-birds of India, I. 1878, p. 114, pl.; Hume, Stray Feathers, VIII. 1879, p. 68 [Malay Pen.]; Kelham, Ibis, 1881, p. 531 [Perak]; Müll, Journ. f. Orn. 1882, p. 432 [Salanga Is., South Tenasserim, Halbinsel Malakka, Singapore]; Grant, Cat. Birds Brit. Mus. XXII. 1893, p. 357; Grant, Hand-book to Game-birds, II. 1897, p. 65; Bonhote, Proc. Zool. Soc. 1901, I. p. 78 [Singei Lebeh and Aring, Kelantan]; Shelford, Report on Sarawak Museum, 1901, p. 12 [Borneo]; Mitchell, Proc. Zool. Soc. 1911, p. 522 [Longevity].

Polyplectron hardwickii J. E. Gray, Ill. Ind. Zool. I. 1830–32, pl. 37; II. 1834, pl. 42, fig. 1; G. R. Gray, List of B. Pt. III. Gall. 1844, p. 22; id. Gen. B. III. 1845, p. 495; id. List Gallinae Brit. Mus. 1867, p. 24; id. Hand-list of Birds, II. 1870, p. 257.

Polyplectron lineatum J. E. Gray, Ill. Ind. Zool. I. 1830–32, pl. 38; G. R. Gray, Gen. B. III. 1845, p. 495.

Polyplectrum bicalcaratum Less. Traité d'Orn. 1831, p. 487; Jard. Nat. Libr. Orn. IV. 1834, p. 156; Blanford Fauna Brit. India, Birds, IV. 1893, p. 74; Oates, Game-birds India, I. 1898, p. 234; H. R. Baker, Jour. Bombay, Nat. Hist. Soc. XVII. p. 764; Sharpe, Hand-list of Birds, I. 1899, p. 39.

Polyplectron malaccensis Hartert, Novitates Zoologicae, IX. 1902, pp. 538–539; Robinson, Jour. Fed. Malay States, I. 1906, p. 129 [Malay Peninsula and Sumatra]; Robinson, Jour. Fed. Malay States, II. 1907, p. 67 [Malay Peninsula, south of Kra Isthmus]; Robinson, Cat. B. Malay Pen. 1910, p. 1; Stuart Baker, Jour. Bombay Nat. Hist. Soc. XXIV. 1916, p. 219.

Polyplectrum bicalcaratus Gyldenstolpe, Swed. Ex. Siam, 1912, p. 66.

HAINAN PEACOCK PHEASANT

Polyplectron katsumatae Rothschild

NAMES.—Specific: *katsumatae,* in honour of the collector, Mr. Katsumata, of Japan. English: Hainan or Katsumata's Peacock Pheasant.

TYPE.—Locality: Mt. Wuchi, Is. of Hainan. Describer: Lord Rothschild. Place of Description: Bull. Brit. Orn. Club XVI. 1906, p. 111. Location of Type: Tring Museum.

BRIEF DESCRIPTION.—Male: Quite close to *germaini,* but smaller, with the ocelli greenish blue changing to yellowish green, instead of violet and purplish green. The mottling of the back, rump, tail-coverts and ventral plumage is finer, and the chin is not pure white. Female: This also differs in its small size and more uneven and finer markings. None of the ocelli are pointed, and the dorsal plumage is more buffy and less grey than in the corresponding sex of *germaini.*

RANGE.—The Island of Hainan.

GENERAL ACCOUNT

I DID not visit Hainan, and the Japanese collector who discovered this species has given us no field notes. In 1904 a single Polyplectron tail-feather was found in Hainan, but though it appeared to present good specific characters, no designation was given it until complete skins were later obtained by Lord Rothschild, named and described.

The species is quite close to the mainland form of *germaini*, but its insularity, forbidding present intergradation, plus the lack of evidence of variability shown by *Phasianus colchicus formosanus*, compels me to give it full specific value.

DETAILED DESCRIPTION

ADULT MALE.—Top of head and hind-neck black, barred with pale grey, but the disintegrated condition of the webs gives the appearance of a grizzled rather than a banded pattern. On the upper mantle the webs become firmer and the bands change to pale rufous brown. The ocelli begin small, but perfect, and almost immediately gain full size. They extend over the lower mantle, scapulars and wing-coverts. They are very unlike the ocelli of *germaini* in colour. When looked at toward the light they show, instead of a dark, solid violet, a prismatic effect, violet anteriorly, shading through blue into rich shining green along the posterior third. Away from the light, instead of a dull blue green, they are a brilliant yellow green. The terminal ring bordering the ocellus is clear or greyish white. The remainder of the feather is dark brown, thickly spotted with buff. The transition from perfection to total absence of the ocelli on the secondaries takes place usually in the space of two feathers, an asymmetrical faint ocellus on the 8th, and a semi-translucent blur on the outer web of the 7th. The remaining secondaries and primaries are dark brown, the former thickly spotted over the whole outer web, the latter faintly freckled along the margin with buff.

The back, rump and tail-coverts are coarsely spotted with pale buffy grey. Twin ocelli appear first on the median tail-coverts, those on the lateral feathers being violet, becoming more and more green as they approach the central pairs. Both these and the ocelli on the rectrices divide the feather into two unequal parts, the distal portion of which shows coarse white spotting like the back and rump; above and posterior to the ocelli the feather is more or less indistinctly mottled with buff. All the caudal ocelli are much more green than in *germaini*, and those on the rectrices themselves are brilliant golden green when looked at away from the light. The chin, throat, lower face and side-neck are white, while the bare facial area is bordered both above and below by a broad line of white feathers, showing black at their bases. The ventral surface is brownish black with numerous irregular broken bands and spots of pale buff.

Iris, lavender grey; bill slate black; feet plumbeous; claws slaty black. The four spurs are 8 to 11 mm. in length. Bill from nostril, 11 mm.; wing, 200; tail, 285; tarsus, 65; middle toe and claw, 48 mm.

ADULT FEMALE.—Forehead, crown and nape brown with a white shaft-streak, and tipped with black. On the mantle olive cross-bars appear, and the white becomes concentrated into a central sub-terminal spot. On the lower mantle and wing-coverts the white becomes a conspicuous white transverse band in a broad black area, the tip of the feather with an irregular border of buffy white streaks, while the rest of the feather shows broad, broken, buff and olive bands.

Sometimes none, sometimes almost all the mantle and wing feathers have a rounded distal extension of the black area with considerable bluish and violet iridescence in the centre. The back and rump are irregularly marked with vermiculations of olive and grey on black, with occasional large spots of white.

The longest tail-coverts either lack the twin ocelli or have them very imperfectly developed, while they are well developed on the rectrices. All the rectrices show rather regular barring. Chin and throat white. Under-parts brownish black, quite regularly barred with olive buff.

There is no hint of the pointed ocelli, as in the female of *germaini*, and the upper parts throughout are not so grey, but more buffy than in *germaini*, and not so evenly marked.

Bill from nostril, 10 mm.; wing, 165; tail, 170; tarsus, 53; middle toe and claw, 40 mm.

JUVENILE MALE PLUMAGE.—Top of the head plain dark brown. Nape feathers with a very faint, terminal, pale buff spot. Mantle with a light buff central area in a dark zone, with a broad rufous border, the light spot becoming pale rufous on the secondaries and coverts. The secondaries lack the pseudo-ocellus area, and are dark brown, vermiculated with pale buff, which becomes rufous toward the tip. Primaries with a wide margin of buff mottling. Back and rump vermiculated with olive buff and with a small but conspicuous terminal shaft-spot of white. Rectrices, long, narrow and pointed, dark brown, with numerous mottled half-bars, especially on the outer webs, of rufous buff, as many as twenty on the central, and six or seven on the outer pairs. There are ten pairs of tail-feathers.

Chin and throat white with narrow brown tips. Under-parts dark brown faintly banded with pale olive buff. Under tail-coverts with a conspicuous sub-terminal band of white.

Bill from nostril, 8 mm.; wing, 150; tail, 160; tarsus, 53; middle toe and claw, 40 mm.

First Year Male Plumage.—Birds of this age have the head and facial border with brown, not with pure black and white markings. The general plumage above is more olive than in the adult, while the lack of the grey and white border robs the ocelli of their firmness. These consist of considerable green iridescence in a large borderless area of black. Terminally there is a broken incised band of pale buff, and just basal to the ocellus is a more or less interrupted, but wide and conspicuous transverse band of white, above which is another of black. The rest of the feather is black, vermiculated and irregularly barred with grey and buff. The transition on the secondaries is on one feather, the 8th, which has a symmetrical but very faint ocellus.

The back and rump show traces of the distal black and white bands so distinct above the ocelli, but they vary considerably, and are broken into large irregular spots. The rest of the feather is mottled and vermiculated with buff.

The rectrice ocelli, while all present, are very poorly defined, as they lack the framing ring of grey.

The chin and throat are white, but the under-parts less distinctly marked than in the adults.

Bill from nostril, 10 mm.; wing, 183; tail, 233; tarsus, 65; middle toe and claw, 48 mm.

SYNONYMY

Polyplectron katsumatae Rothschild, Bull. Brit. Orn. Club, XVI. 1906, p. 111 [Mt. Wuchi, Hainan].

Polyplectron bicalcaratus katsumatae Hartert, Novitates Zoologicae, XVII. 1910, p. 191 [Chickeriang, South Hainan].

BORNEAN PEACOCK PHEASANT

Polyplectron schleiermacheri Brüggemann

NAMES.—Specific: *schleiermacheri*, after Herrn Schleiermacher, Director of the Hessian Museum. English: Bornean Peacock Pheasant.

TYPE.—Locality: Moera Teweh, South-east Borneo. Describer: Brüggemann. Place of Description: Abh. nat. Vereina zu Brehm, V. 1877, p. 461, pl. IX. Location of Type: One in British Museum, one in Darmstadt Museum.

BRIEF DESCRIPTION.—Male: Most closely related to the Malayan Peacock Pheasant. The crest is not so long, and the violet frill around the hind-neck somewhat longer and more brilliantly coloured, and there are metallic golden-green spots on the sides of the neck and breast. The dorsal eye-spots are bluish green. Underparts black, speckled with buff; centre of neck, breast and abdomen white. The ocelli of the tail-coverts and central rectrices touch, but do not merge. Female: Differs hardly at all from the female of the Malay bird. It sometimes lacks the eye-spots on the upper tail-coverts, and the dorsal ocelli usually show a greater amount of gloss. The ventral plumage is decidedly darker than in *malaccensis*.

RANGE.—Borneo; in the northern, central, and south-eastern parts.

GENERAL ACCOUNT

THE first skins of this species were collected by Dr. G. Fischer at Moera Teweh, in the interior of south-east Borneo, and sent to the Museum at Darmstadt. They were named by Dr. F. Brüggemann in honour "des hochverdienten Directors der Grossherzoglich Hessischen Museen, des Herrn Minister Schleiermacher." The type is now in Darmstadt in the Grand-Ducal Naturalien-Sammlung. Besides the type locality in south-east Borneo, Everett has recorded it from Paitan, North Borneo, and I am able to add a new locality, Central Sarawak, well up toward the Dutch border. A Dyak one day brought me a handful of feathers, including several of the tail of this species, and said he had trapped it two days upstream. One of my men was just leaving to get argus, so as not to disturb those in my vicinity which I wished to observe, and he took this man as guide. When they revisited the trap, they found an argus which had been eaten by a civet cat, but by careful search among the leaves a number of additional Polyplectron feathers were found, thus confirming what the Dyak had said. I could obtain no reliable information about them, and the bird seemed almost unknown to these savages. As they had separate names for all the other pheasants, and were familiar with their haunts and habits, this species must be exceedingly uncommon for them to be so ill-acquainted with it.

This Bornean Peacock Pheasant is quite closely related to the Malayan and Sumatran *malaccensis*, differing in having a number of the characters more highly specialized.

DETAILED DESCRIPTION

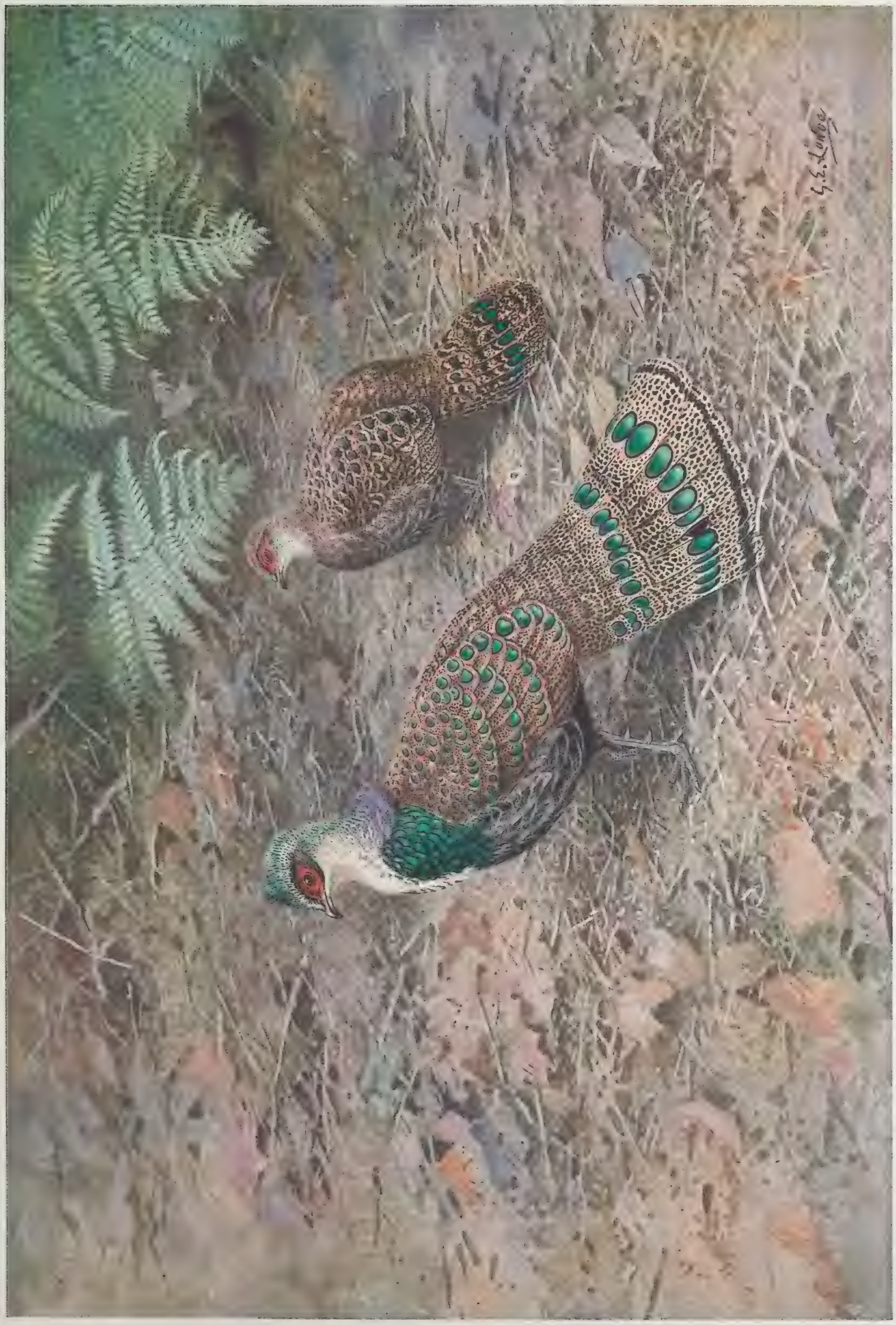
ADULT MALE.—There is no isolated, elongated crest, but the entire plumage of the forehead, crown and nape is recurved, so that it stands fairly erect. Throughout this area the feathers are strongly glossed with green, with enough of white to give a

BORNEAN PEACOCK PHEASANT

Polyplectron schleiermacheri Brüggemann

THIS is the most brilliant of the Burmese group of Peacock Pheasants. It is found in hilly jungle near the centre of Borneo, in the same country as the Argus Pheasant, but it is rare everywhere, and unknown even to many of the native Dyak hunters.

PLATE LXXIX.



BORNEAN PEACOCK PHEASANT.

general grizzled appearance. The elongated, disintegrated and recurved ruff or frill of the neck is like that of *malaccensis*, except that it is slightly longer and the iridescent border is much wider, and bluish with weak violet reflections. The proximal three-quarters of the feathers are white, banded, and, more basally, spotted with black.

The ocelli of the mantle and wing-coverts are somewhat smaller than in *malaccensis* and the buff ground colour rather darker. As in the other species, the ocelli die out at about the 7th secondary, in a single outer ocellus, forming the transition to the next outer feather which shows no trace whatever.

The feathers of the back, rump, tail-coverts and rectrices are remarkably broad and truncate at the extremities, with a black terminal band and series of good-sized black spots filling the webs. An interesting character is the iridescent green which is present in most of these spots, sometimes in three or four on the same feather, forming diminutive, incipient ocelli. This character is usually located in the one or two pairs of spots nearest the place where the large ocellus would normally occur, but it is found as a gloss over most of the visible dark markings.

The same is true of all save the longest tail-coverts, on only one of which in a single individual have I found ocelli developed. The longest coverts show two ocelli, slightly more separated than in *malaccensis*. Below these, a single row of eight to twelve large, round, black spots extends across the feather, beyond which is a broad, terminal, black band. The central rectrices are similar, except that the ocelli are not so near the tip of the feathers, and the black band is sub-terminal, with a row of spots between it and the tip. As we pass from the second pair of rectrices outward, the inner ocellus begins to undergo degeneration, the green iridescence disappearing first, and the oval shape then changing into a broad band extending across the inner web. This is its condition on the outer tail-feathers.

The black lower cheek and ear-covert mark of *malaccensis* has increased superiorly, sending a long, narrow arm up to and around the almost bare facial area to above the eye. The chin and throat are pure white, this colour reaching well around on the side neck. Ventrally, it extends at a narrow line down the centre of the breast and belly.

The feathers of the side neck and fore breast are rather elongated and far overlap the first part of the wing. They are jet black, with the visible portion, in the form of a broad rounded margin, brilliant metallic green. In fact, they are inchoate ocelli with no boundary except the margin of the next overlapping feather. Basally, each feather shows a small mottled area along the shaft. Posteriorly, beneath the wings and along the sides this zone dies out in buff mottled feathers like those of the upper plumage, these giving place in turn to the lower breast and belly plumage, which is dead black with faint and sparse buff vermiculation, increasing as we pass laterally under the wings.

The under tail-coverts are truncate, with a narrow black fringe, then a solid buff bar. Above this is a large area of plain black, with, still more basally, a V-shaped mark near the shaft and other mottlings of pale buff.

In a male, shot on the 23rd of November, and not fully adult, the tail is just sprouting, and shows the characteristic Argusine sequence of moult. The central and the two outer pairs of rectrices are far behind the intervening ones, which grade distinctly from the 3rd from the outer pair.

In most characters the bird is very close to the first described adult male, but the outer primary, which is as yet unshed, shows considerable buff mottling on the outer web, which is absent from the other nine new ones. Of especial interest are the 1st and 2nd secondaries, which are unshed and quite unlike the others. These new ones are of the usual pale buff, thickly spotted with black, but the old, first-year ones are dark brown, with seven or eight transverse rufous bands on the outer web, and some mottling of the same colour toward the extremity of the inner web.

A number of shorter upper tail-coverts still unshed show a rather confused mottling of rufous buff, with several large, irregular, dark interspaces, instead of the succeeding evenly barred pattern. The old back and rump feathers are vermiculated thickly and finely, instead of being marked with the dense, more or less regular, spotting. The forehead is chiefly black and white, with but little green iridescence.

Length of adult male, about 500 mm.; culmen from nostril, 13; wing, 200; tail, 190; tarsus, 68; middle toe and claw, 45 mm. The spurs, usually four in number, are not long, often only 10 mm. in length.

ADULT FEMALE.—The bird very closely resembles *malaccensis*, and even the usually quoted distinction of the lack of ocelli on the longer upper tail-coverts does not hold good, as in a number of specimens I have found them well developed.

The gloss on the dorsal ocelli, in the fully adult bird, is considerably greater than in *malaccensis*.

The top of the head and hind neck is ashy brown, paling on the side head and neck into the pure white of the throat and chin. The white feathers of the lower cheeks bounding the bare facial area are white margined with dark, and the ear-coverts are dark slaty brown. The upper neck and entire under parts are olive brown finely vermiculated with dark brown, the ventral surface being considerably darker than in *malaccensis*, and indeed the belly and lower sides show but little vermiculation, being almost solid brownish black.

The ocelli of black pigment on the mantle and wings are large, and a considerable portion of the central half of each ocellus is highly iridescent. Each ocellus is almost surrounded by a more or less distinct ring of pale buff, which, distally, sends irregular prolongations into the disk itself. As usual, the ocelli die out upon the middle secondaries, leaving only the buff freckling on the outer webs, the primaries being quite clear brown.

The females in first-year plumage always lack the twin ocelli on the long tail-coverts, the place of the eye-spots being taken by a subterminal black band flanked by one of buff, but in the fully adult bird the black band is very often divided into two rounded ocelli, as strongly glossed with green as any on the mantle or wings.

The rectrices show numerous well-marked cross-bands of mottled buff with two well-developed ocelli on the central rectrices. Unlike *malaccensis*, the inner ocellus dies out slowly, as we pass toward the outer pair, retaining traces of the green gloss for the succeeding three pairs of feathers, then changing to a clear, dark space, sharply demarcated by buff lines, this character extending to the very outer pair. The under tail-coverts are blackish with a terminal buff band of broken spots.

Length of adult female, 410 mm.; bill from nostril, 11; wing, 180; tail, 180; tarsus, 60; middle toe and claw, 40 mm. Spurs absent.

SYNONYMY

Polyplectron schleiermacheri Brüggemann, Abh. nat. Vereins zu Brehem, V. 1877, p. 461, pl. IX. (Original description, South-east Borneo); Brüggemann, Der Zoologische Garten, 1877, p. 214; von Pelzeln, Verh. der k. k. zool.-bot., Gesell. Wien. XXX. 1880, p. 27 (Female described: Teweh, Central Borneo); Everett, Jour. Asiatic Soc., Straits Branch, 1889, p. 198; Grant, Cat. Birds Brit. Mus., XXII. 1893, p. 359; Grant, Hand-book Game-birds, II. 1897, p. 66; Sharpe, Hand-list of Birds, I. 1899, p. 39: Hartert, Novitates Zoologicae, IX. 1902, p. 539.

PALAWAN PEACOCK PHEASANT

Polyplectron napoleonis Lesson

NAMES.—Specific: *napoleonis*, dedicated to the Emperor Napoleon. English: Napoleon's or Palawan Peacock Pheasant. Native: Sulu Malāk; Dusan Bērtik.

TYPE.—Locality: de l'Inde. Describer: Lesson. Place of Description: Traité d'Orn. 1831, pp. 487, 650. Location of Type: Academy Natural Sciences, Philadelphia.

BRIEF DESCRIPTION.—Male: Crown and long, hairy crest shining bottle green; mantle and wings rich blue, bordered with green; back and tail black, mottled with rufous buff; the longest tail-coverts and tail-feathers with a pair of green ocelli framed in black and grey, the inner ocellus disappearing on the outer rectrices. Cheek patch white. Face, throat and under-parts black. Some males have white superciliary lines confluent on the nape. Female: Long, thin-vaned, dark brownish crest. Upper parts rufous-brown mottled with black; mantle and wing-coverts with a faint terminal band of rufous-brown; ocelli abortive on tail coverts, and less perfectly developed on the tail than in the male. Face, superciliary, nuchal lines, and throat white. Under-parts reddish-brown faintly mottled with black.

RANGE.—The island of Palawan, Philippines.

GENERAL ACCOUNT

I DID not visit Palawan, and so made no observations on this species in its haunts. Mr. J. Whitehead has trapped this bird and gives us the following notes: "This splendid little pheasant is scarce and local, all my specimens having been collected in one forest, and although my men set hundreds of snares in other forests we never met with another during three months. One female was eaten by a wild cat in one of the traps, and I rather expect this little tiger destroys numbers of this beautiful bird.

"This species, like the argus pheasant, has its 'showing off' arena, a neatly-swept patch some three or four feet in diameter; the chosen spot is generally in some unfrequented part of the forest. I often noticed that this ring had a small hump of earth in the middle, where no doubt the male birds show off their splendid plumage and perhaps do battle. Their battles, if they have any, must be very short and decisive, as the double spurs of the cock would be sufficient to cut his adversary into bits.

"I am inclined to think that the birds pair and are not polygamous, as we collected three pairs; but that was not during the nesting season, which is probably in the months of December and January."

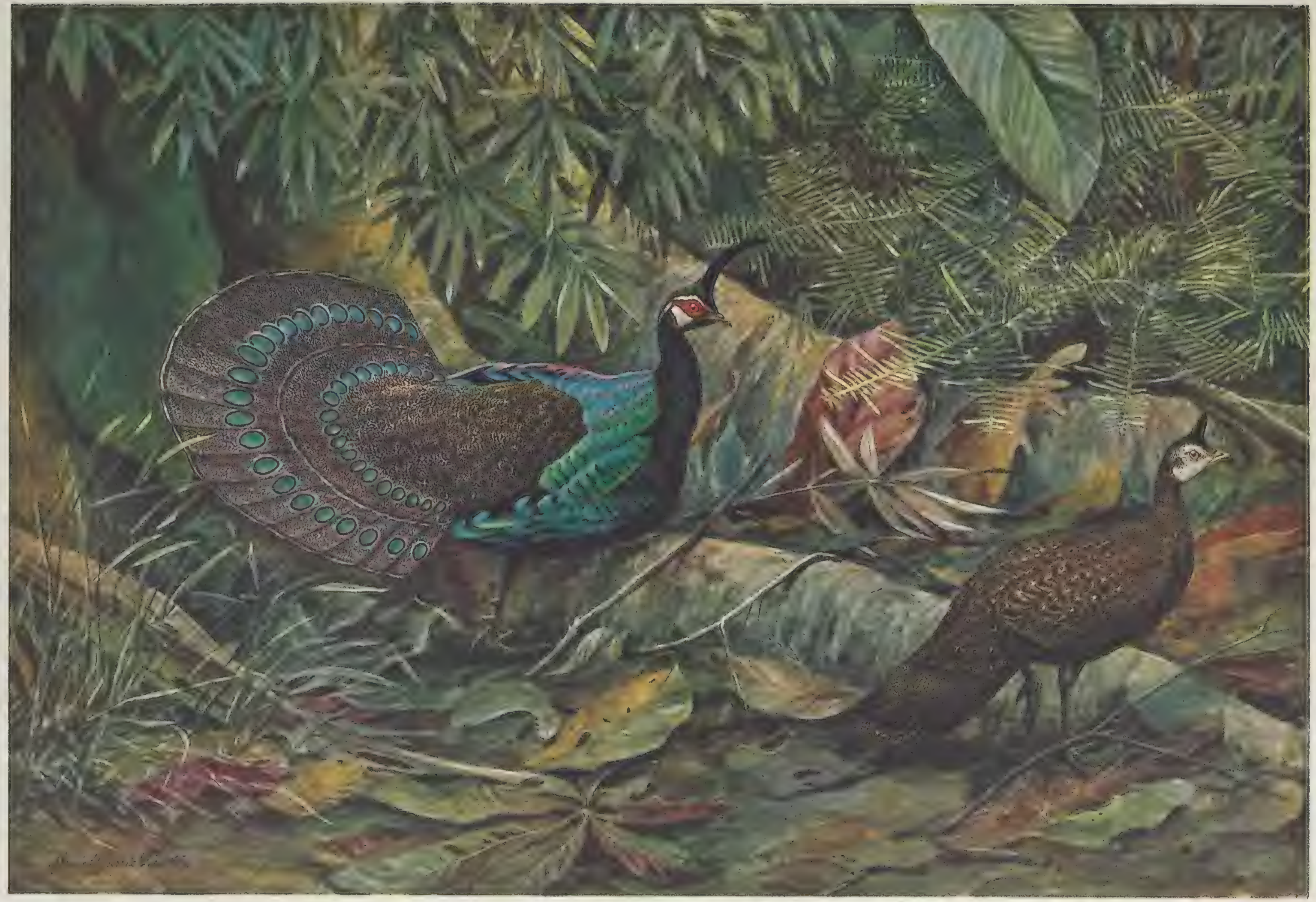
In spite of the author's account of the showing-off place, I am inclined to think he is mistaken. I have watched other species of Peacock Pheasants, both wild and in captivity, and have never observed anything of the kind. There is no native legend or knowledge of any of these birds forming a dancing ground, while the habit of the Argus is widely known among the savage tribes of the Malay States, Sumatra and Borneo. Mr. Whitehead does not support his statement by saying what its foundation was. If he had found the feathers of these birds in such an arena or

PALAWAN PEACOCK PHEASANT

Polyplectron napoleonis Lesson

The most brilliant and specialized of the entire genus, and confined to the small island of Palawan. Only a few specimens have been secured, for most of those trapped by the natives are eaten by jungle cats before they can be saved.

PLATE LXXX.



PALAWAN PEACOCK PHEASANT.

had seen them using it, I feel sure he would have advanced such proof. It is probably based on the belief of one of his men.

Early in the year 1831, Lesson in his *Traité d'Ornithologie* enumerated this species, calling it *napoleonis*. On May 14th of the same year Temminck published the description of a male under the name *emphanum*, from a single specimen in the museum of the Prince of Essling. Its home was unknown, but it was conjectured to be a native of one of the Sunda Islands or the Moluccas.

A second specimen was acquired by the British Museum from Verreaux, its home still being unknown. G. R. Gray accredited it to the Moluccas; Sclater and Elliot selected Borneo as its more or less probable habitat. In 1877, almost fifty years after its first description, Everett collected specimens in Palawan, an island lying off the north coast of Borneo, and partly bridging the geographical gap between that great island and the Philippines, and we now know that the bird is confined to this island.

DETAILED DESCRIPTION

Adult Male.—This is one of the most specialized of the Peacock Pheasants, closest perhaps to *schleiermacheri*. Top of the head and nape, including a long, straight crown crest, dark bottle green, with a bluish cast. The crest extends straight back and is once again as long as the head. Lower neck with short, black, recurved feathers. On the upper mantle a broad, terminal band of golden green appears, sometimes extending faintly around on the fore neck. This increases on the lower mantle until the entire visible portion of the feathers is metallic, green around the margin and end, and becoming a beautiful dark ultramarine or sapphire blue in the centre and toward the jet-black, concealed, basal half of the feather. With less blue apparent, a similar pattern characterizes the scapulars, median and greater wing-coverts and inner secondaries. The arrangement varies according to the exposed area of the feather, the green extending far up along the outer web of the greater coverts and secondaries. The first trace of green appears on about the eighth secondary. The next two or three outer ones, however, show considerable dark pigment. The primaries and their coverts are dull dark brown. The lesser wing-coverts are black.

The gloss vanishes abruptly on the back, the zone of transition showing almost no parti-coloured feathers. In place of the green and black, we find all the remaining upper plumage black, thickly spotted and mottled with rufous buff. On the back this is arranged in several more or less definite cross bars, sometimes quite confluent, but on the rump, tail-coverts and tail-feathers, the small round spots are abundant, smaller, less rufous and dotted about irregularly, with no banded arrangement visible. The tail-coverts are short and differ in no way from the feathers of the rump, except the longest row. These approximate the tail in size, colour and pattern, and are even more highly developed as to ocelli. Each of these coverts has a pair of bluish-green eye-spots, changing to rich violet, each framed by two rings, black and grey respectively. There is a subterminal black band across each feather, bounded at the tip by a narrow broken band of buff. The tail-feathers are twenty-four in number and quite similar to the longest coverts, except that the black band near the tip fades into grey, across which extends a conspicuous line of solid white. Only the central rectrices show two perfect ocelli, that on the inner web degenerating as we pass outward over the twelve pairs of feathers. On the sixth from the central pair the gloss has vanished, leaving only an elliptical, clouded, black spot. On the outer pair there is merely a small circular area where the buff spotting is duller than elsewhere. The character of the terminal bands persists strongly throughout. The under tail-coverts are brownish black, with a subterminal band of jet black. The terminal band, and the dotting on the outer web are buff.

The lores, rather thin feathering of the face, chin, throat, sides of the neck and entire ventral and side plumage are black, with a brownish cast as we proceed backward on the abdomen. A triangular patch of feathers covering the hinder part of the cheeks and the ear-coverts is silvery white. There may be no more white markings on the head, or a few scattered white feathers may occur above the eyes and on the sides of the nape. This character, which is wholly independent of age or season, is found in varying degrees of development up to an extreme of broad white superciliary lines which extend backward and coalesce in a broad band on the hinder neck.

Bill black, paler toward tip; feet and legs blackish brown; facial skin reddish, sometimes quite crimson near the eye; irides hazel. Length, 550 mm.; bill from nostril, 13; wing, 190; tail, 225; tarsus, 63; middle toe and claw, 54 mm. Spurs invariably two on each leg, of medium build, and very sharp, 12 to 14 mm. in length.

Adult Female.—Top of the head and nape blackish brown, an elongated, rather coarse crest curving back from the crown. Neck feathers short, smoky-brown and recurved. Upper plumage pale rufous brown, finely vermiculated and mottled with black, faintly on the mantle, more strongly on the coverts and back. An ill-defined submarginal band of rufous buff on the mantle and coverts. On the greater coverts and inner secondaries there are strong hints of ocelli, in the shape of round black spots, rather poorly set off from the surrounding web. Primaries and their coverts dark brown. Many of the coverts, back, rump and shorter tail-coverts have conspicuous white shafts. The rump is decidedly more rufous than the anterior plumage. The tail and coverts show a fine mottling and vermiculation of rufous buff and black in about equal amounts, which is almost lacking, however, on the concealed inner webs of the rectrices. Occasional females in very full plumage, show a decrease of the buff, giving a black feather, irregularly dotted with buff. But this is exceptional. Greater upper tail-coverts are much elongated, and in full-plumaged females, each feather shows a pair of incipient ocelli, a large, dark elliptical spot in the centre of each web. A nucleus of green gloss is occasionally visible.

The twenty-two tail feathers show the ocelli much more fully developed, a large green centre framed in a very wide black circle, which shades off into the surrounding vermiculation. As in the male the pair of eye-spots are perfect only in the central pair of rectrices, the inner one losing its gloss on the second or third pairs and being wholly absent from the outer pair.

The scantily-feathered face, chin and throat are white. In most females there is a very distinct development of the white superciliary and nuchal bands, corresponding to those of some of the males. The under parts are reddish brown, faintly mottled with black. The pale shafts are sometimes emphasized on the breast feathers. Orbital skin pinkish. Bill black, with paler tip; legs and feet horn colour. Iris hazel brown.

Length, 400 mm.; bill from nostril, 12; wing, 170; tail, 145; tarsus, 55; middle toe and claw, 46 mm. Spurs absent, although a low rounded nodule indicates the position of the anlagen of these organs.

Juvenile Plumage.—Very similar to the adult plumage of the female, with the exception of the crest and tail. Top of the head of short, brownish black feathers, with only the faintest trace of a median crest. Neck feathers short, recurved, dull brown. Dorsal plumage rufous brown, indistinctly mottled with black, feathers of the back, rump, scapulars and wing-coverts with pale buff shaft-stripes. Wing-coverts with a large, dark, subterminal area, bounded along the margin by a mottled band of rufous brown. Secondaries mottled rufous on the outer webs, primaries plain dark brown.

Thinly feathered face, chin and throat whitish, shading into the dull brown of the ventral plumage. Upper tail-coverts all of normal length, the longest not noticeably different from the others. Rectrices twenty-two in number, long, slender and somewhat curved, dark brown, mottled with rufous brown on the outer webs. On the outer webs of the three or four outer pairs, incipient traces of ocelli are apparent in the form of irregular dark spots.

Bill dark brown, paler at the tips; legs and feet pale brown; facial skin yellowish. No spurs distinguishable. Length, 290 mm.; bill from nostril, 9; wing, 140; tail, 108; tarsus, 48; middle toe and claw, 42 mm.

The sexes are almost indistinguishable, the males having the mottling a little coarser, and the dark spots more pronounced.

First Year Male Plumage.—This moult brings the males still closer to the adult females in appearance. The elongate crest of stiff, close-vaned, narrow feathers is exactly like the female and wholly different from that of the adult male; the white superciliary and nuchal lines are well developed, to be later intensified or wholly lost according to the stage of degeneration in the adult.

The black subterminal spots are very strongly developed on the inner median and greater wing-coverts and the inner secondaries. The longest row of upper tail-coverts have occasional traces of ocelli, and even green central nuclei. The tail-feathers show coarser and paler buff mottling than in the adult female and the black frames of the ocelli are much better defined. Length, 415 mm.; bill from nostril, 11; wing, 180; tail, 155; tarsus, 63; middle toe and claw, 52 mm. The spurs are rudimentary rounded knobs, the upper pair usually appearing first. The sequence of tail moult at this stage is the same as in the succeeding ones.

In a female of this age, the pale buff shaft-marks are remarkably developed, appearing over the entire neck and mantle as drops or spots, and on the remaining dorsal plumage as conspicuous shaft-streaks, each terminated by an enlarged spot.

Second Year Male Plumage.—This moult begins with the tail and longest row of upper tail-coverts, the growth of these being apparently accelerated owing to their important function in courtship. They may be almost full grown and in colour and pattern hardly to be distinguished from the fully adult male, before a noticeable change takes place in the remainder of the plumage. This rectrice moult, however, more often results in eleven than in twelve pairs of feathers. The white facial featherlets are rapidly replaced by black ones, and the adult plumage supersedes the brown, female-like body feathering. Months before this, however, any stray feathers which are tweaked out, are replaced by parti-coloured, brown and green ones. Or if a first-year crest feather be lost before the time of regular moult, the ingrowing feather will be normally vaned at the tip, giving place basally to the disintegrated, glistening green filaments of the crest of the adult pheasant.

SYNONYMY

Polyplectron napoleonis Lesson, Traité d'Orn. 1831, pp. 487, 650; id. Comp. de Buff. VII. 1836, p. 323; Gray, Gen. B. III. 1845, p. 495; id. List Gallinae Brit. Mus. 1867, p. 25; Tweedd. Proc. Zool. Soc. 1878, p. 792; Sharpe, Ibis, 1888, p. 203; Blasius, Ornis, 1888, p. 317 [Palawan]; Everett, List B. Born. 1889, p. 198 [Palawan]; Whitehead, Ibis, 1890, p. 57 [Palawan, habits]; Grant, Cat. Birds Brit. Mus. XXII. 1893, p. 361; Bourns and Worcester, Minn. Acad. Nat. Sci. Occ. Papers, I. No. I. 1894, p. 43; Grant, Hand-book to Game-birds, II. 1897, p. 66; Hartert, Novitates Zoologicae, IX. 1902, p. 539.

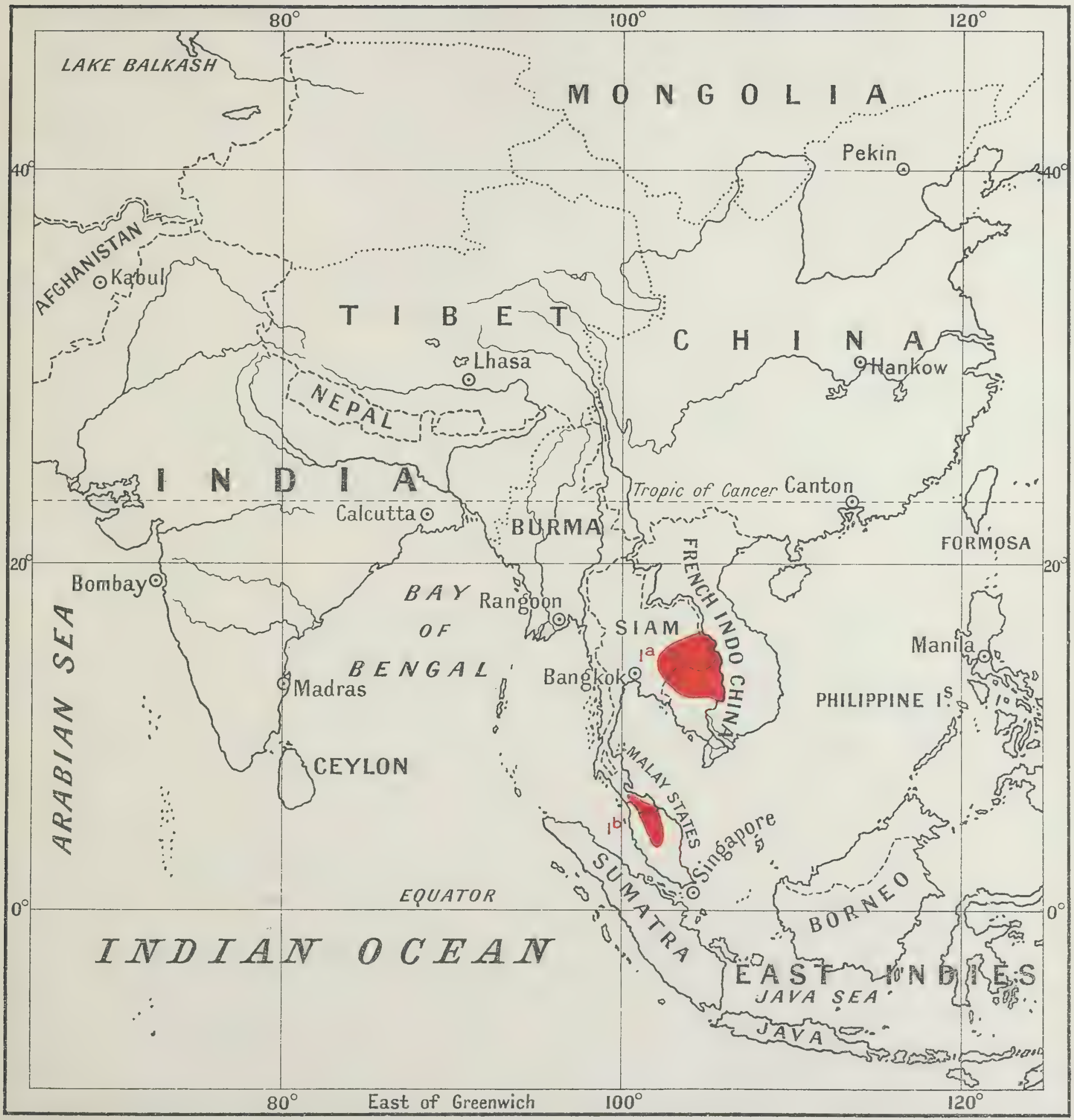
Polyplectron emphanum Temminck, Pl. Col. V. 1831, pl. 18 [no. 540]; Jard. Nat. Lib., Orn. IV. 1834, p. 159, pl. 5; Gray, Hand-list of Birds, 1870, p. 257; Elliot, Mon. Phas. I. 1872, pl. 9; Salvad. Ucc. Born. 1874, p. 304; Oustalet, Bull. Soc. Philom. (7) VI. 1882, p. 259 [Luzon].

Emphania napoleonis Bonap. C. R. XLII. 1856, p. 878.

Polyplectron emphanes Sclater, List of Phas. 1863, p. 12; Sclater, Ibis, 1878, p. 386; Tweedd. Proc. Zool. Soc. 1878, p. 623 [P. Princesa, Palawan].

Polyplectron nehrkornae Blasius, Mitth. orn. Ver. Wien, 1891, p. 1 [Palawan]; id. Jour. f. Orn. 1891, p. 10; Grant, Cat. Birds Brit. Mus. XXII. 1893, p. 360.

RHEINARDIUS
OCELLATED PHEASANTS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MAP SHOWING THE DISTRIBUTION OF THE OCELLATED PHEASANTS.

Region Ia. Rheinardius ocellatus ocellatus Region Ib. Rheinardius ocellatus nigrescens

RHEINARDIUS

OCELLATED PHEASANTS

Order GALLIFORMES

Family PHASIANIDAE

Subfamily ARGUSIANINAE

Genus *RHEINARDIUS*

THE Ocellated Pheasants are large birds, as strange in appearance as they are rare and mysterious in life. Their general characters unite them closely with the argus pheasants, but they are much less specialized both in development of secondaries, as well as in pattern and colour, while the face and neck are more normally feathered. In this generalization, and in living at considerable elevations, they resemble the *Chalcurus* bronze-tailed peacock pheasants in their relationship to the genus *Polyplectron.*

These birds clear display-arenas like the argus, and there is some indication that they also lay only two eggs. There is a long, hairy nuchal crest, and the central rectrices of the male are greatly elongated. Spurs are absent.

The females are smaller and lack the long tail-feathers, and in pattern and colour are much more generalized than the female argus. The general pattern of *Rheinardius* females resembles that of the back and rump of the hen argus.

RHEINARDIUS

	Type
Rheinardius Oustal. Bull. Soc. Philom. (7) VI. 1882, p. 254	*R. ocellatus*
Rheinardius Sclat. and Saund. Ibis, 1883, p. 107	*R. ocellatus*
Rheinartius Oustal. N. Arch. Mus. (2), VIII. 1885, p. 256	*R. ocellatus*

The Ocellated Pheasants are found in the mountain forests of Western Annam, and along the central mountain range of the Malay Peninsula.

Two species of *Rheinardius* are recognized:

Annam Ocellated Pheasant	*Rheinardius ocellatus* (Elliot)
Malay Ocellated Pheasant	*Rheinardius nigrescens* Rothschild

KEY TO THE FORMS OF *RHEINARDIUS*

I. Central tail-feathers enormously elongated (males).	
a Dorsal spots buffy and irregular	*ocellatus*
b Dorsal spots white and round	*nigrescens*
II. Central tail-feathers not enormously elongated (females).	
a Ventral plumage brown	*ocellatus*
b Ventral plumage buffy	*nigrescens*

ANNAM OCELLATED PHEASANT

Rheinardius ocellatus (Elliot)

NAMES.—Generic: *Rheinardius*, after M. le commandant Rheinart, a French official in Hué, Cochin-China, who sent the first known skin to Paris. Specific: *ocellatus*, Latin, ocellatus, furnished with small eyes, or spots resembling eyes. English: Rheinart's or Annam Ocellated Pheasant. German: Rheinardts Fasan. French: Argus de Rheinart ou Rheinarte ocellé. Native: Tri (Annam).

TYPE.—Locality: Unknown. Describer: Elliot. Place of Description: Ann. Mag. Nat. His. (4) VIII. 1871, p. 119. Location of Type: Four feathers in the Paris Museum.

BRIEF DESCRIPTION.—Male: An erect, hairy nuchal crest. General colour dark brown, mixed, especially below, with rufous, and thickly covered with small whitish buff spots and markings. Central tail-feathers greatly elongated. These and upper tail-coverts with large chestnut spots and markings, those near the shaft with black centres. Outer tail-feathers reddish brown, thickly covered with round white spots surrounded with black rings. Female: Crest shorter. Olive brown above, mottled with black and buff, more strongly on secondaries and tail-feathers. Brown below, finely mottled with black.

RANGE.—Mountain forests of Western Annam.

GENERAL DISTRIBUTION

LITTLE is known of the exact range of this form of Ocellated Pheasant. It is known to occur in the mountains of the central and western part of Annam, but has not yet been recorded from the Meking or beyond. It is unknown on the coastal plains and in the southern part of French territory, in Cochin-China proper. Yet its very close relation to the species *nigrescens* from the Malay Peninsula would indicate that the range of the two forms must approach one another, or at least formerly did so.

GENERAL ACCOUNT

Comparatively little is known of this magnificent bird, so that our account must deal altogether too much with the least interesting phase of its monographic treatment, its discovery by man and its subsequent literary vicissitudes.

Many years ago there were found in the Muséum d'histoire naturelle de Paris several feathers of unknown origin and source. M. Jules Verreaux, after studying these, came to the conclusion that they represented a new species of argus pheasant, for which he proposed the name of *ocellatus*. As far as we know he recorded this name only in manuscript, and the first mention of it is in 1856 by Bonaparte in his *Tableaux parallèliques de l'ordre des Gallinacés* ("Comptes rendus de l'Académie des Sciences," XLII. 1856, p. 878). Whether Verreaux wrote *Argus* or *Argusanus* is not clear, but the latter generic term is the one used by Bonaparte. Sclater and Gray both accepted this name, but neither Bonaparte nor they gave any description of the feathers. Elliot corrected this in 1871 in a careful description of the colour and pattern, and the following year ("Monograph of the Phasianidae," I. 1872, pl. 13) gave a full-sized coloured plate of three of the four known feathers, one of which was a long, ocellated, central tail-feather, and the others, less decorated, wing-feathers.

Elliot was criticized on two counts; first, that the shorter feathers were rectrices of the Javan peafowl, and second, that it was a deplorable practice to give names to fragments of birds. The first critique was shown to be false, and the second was satisfactorily answered. As regards this objection to the naming of a new species from fragments, the point is reasonably raised that one might go farther and object to the naming of a bird unless all the phases of plumage, sexual and developmental, assumed during its life, were known. The hawks, for example, present a number of cases where different names have been given to the two sexes, or to colour phases of the same species. The whole matter should be governed by sense and judgment. I did not give a name to the breast and wings of Kuser's blood pheasant until the characters were confirmed by several complete specimens; such extension of colour might have been individual. But it was right to name the Mikado pheasant from the two tail-feathers, and the Ocellated Pheasant from the long central rectrice, because such characteristic single feathers could not fail but represent a bird unlike any heretofore known.

The status of the bird remained undisturbed until 1882, when a Parisian naturalist, M. Maingonnat, received from Commander Rheinart the perfect skin of a male pheasant, which set all doubt at rest as to its distinctness. It had been captured in a native trap about twenty kilometres west of Hué, the capital of French Indo-China, at the foot of the Laos Mountains. The medical attache of the Hué legation, who skinned the bird, "dit que la chair était foncée, très savoureuse et rappelant celle du Faisan."

M. d'Aubusson, in an article in the "Bulletin de la Société d'Acclimatation" for 1887, tells us that Commander Rheinart, in the course of his pursuit of elephants, wild cattle and rhinoceros, occasionally met with stray feathers of this bird, both in Cochin China and Annam, but never saw it. Many of the natives whom he questioned said they too had found feathers, but likewise had never caught a glimpse of the owner. Rheinart says that the Annamese prize these feathers highly and use them for head-dresses.

On the arrival of the skin of Rheinarte ocellé, M. Maingonnat made it known to the French Zoological Society under the name of *Argus Rheinardi*, and soon afterwards described it in full in the periodical called "la Science pour tous," under the name of *Rheinardia ocellata*. He thus recognized the necessity of creating a new genus for this Annam pheasant, retaining the specific name given by Jules Verreaux. Still later M. Oustalet described the same specimen in two periodicals, calling it first *Rheinardius ocellatus* and subsequently *Rheinartius*.

Several months after the receipt of the first specimen the Paris Museum acquired a second from M. Le Myre de Vilers, the Governor of Cochin China. Official requests for living specimens made through the Government brought a quick response. A living bird was sent to the French officials at Hué by the native emperor Tu-Duc.

The royal gift was said to have been sent to the Legation in charge of an escort of soldiers, and created great excitement among the crowds of onlookers.

The best care possible was given to this, the first known living example of this splendid bird. At night its cage was placed in a spacious stall, in the day it was allowed the freedom of the Legation garden. But it showed little response to this treatment, squatting immovable, taking food from the hand, both grain and insects, but scarcely able to stand on its feet. It died after a few days from the wound which it had received in being snared.

A letter from M. Moquin-Tandon, director of the Botanical and Zoological Gardens of Saïgon, contains some interesting facts, at least concerning the haunts of the Ocellated Pheasant, if not of the bird itself. It inhabits the mountainous forests two hundred and fifty to three hundred kilomètres west of Hué. There is a large section of these mountains which is almost unknown, inhabited by tribes of semi-savages who have little or no communication with the outside world. At long intervals a Chinaman, bravely taking a desperate chance, traverses the lonely trails which, few and far between, lead through the country. He risks everything for the sake of exchanging packets of salt and tobacco, of needles and little knives, for the powder of rhinoceros horn, for ivory and certain gums and resins to which the Chinese attribute all sorts of virtues. If he is not robbed by those with whom he came to trade, or if he is not eaten by some one of the numerous tigers which abound, at last he returns to China with his gains, never, it is certain, desiring to repeat his trip. This shows the difficulty of obtaining these birds in a country where even the missionaries usually find it impossible to do more than reach the very edge of this wild country.

The only detailed account of this bird is a letter written by one P. Renaud, the missionary who obtained the skin of the first Ocellated Pheasant for Rheinart. In the main the facts seem to be reliable; one or two notes, however, evidently obtained from the natives, being most assuredly fiction.

This pheasant is confined to the mountains which separate the Laos country from Annam. It certainly occurs from the latitude of Qui-Nhon on the south, up to the Gianh River on the north. It is unknown at Saïgon, and in fact is absent from all the low plains of southern Cochin China. In the west the travellers who have ascended the Mekong make no mention of it. In the west it has never been observed in the lowlands which stretch from the mountains to the sea. It is, however, not uncommon in even the first dense forests which border the low country.

For many years M. Renaud has heard, morning and evening, the call of the Ocellated Pheasant ringing through the jungle. It prefers the quiet and lonely forests, especially on the mountain-sides and their narrow valleys. It there haunts the dense undergrowth, perhaps because the shade and dampness attract quantities of the insects which chiefly compose its food. It is usually found in the vicinity of large trees in which it roosts. Hence it chooses those with horizontal branches, affording easy perches. On the ground it finds the crickets and other insects, and even little frogs, on which it feeds. Renaud kept this species alive for two months with such food, adding bananas, rice and maize, for which it showed little desire.

A native of Annam hatched two young from two eggs which he placed under a hen, and for several months they lived with the other inmates of the farm-yard, partaking of the same food, worms, insects and various grains which they found for themselves by searching actively about. The native wild Moï say that they can easily rear the young, but that they are not successful in keeping alive the adults. Three or four were brought to Renaud, and in spite of the wounds made by the snare and the fatigue of the journey, they were saved and kept in good health for two months.

They seem to be of a gentle nature, hardly alarmed by visitors, taking food and drink a few minutes after being liberated in their enclosure. They were never seen to resent persecution from other inmates of their runway.

These captive birds would call morning and evening, just as if they were in the jungle. This call is "absolument rhythmé comme celui du Paon, mais il est doux, harmonieux, agréable à l'oreille, tout en restant très retentissant." When they give it high up in some venerable tree it can be heard at a great distance, and always attracts the attention of the traveller. When walking about on the ground it utters a low, gentle note, sounding like *rroue*, *rooue*.

Its calls become more frequent in March and April. At the time of courtship it selects a flat, clear piece of ground, close to the foot of a great tree. The female remains perched upon a branch while the male displays and struts about on the ground. The eggs are larger than those of a fowl, but, like them, are pure white. The female does not make any special nest. When the young are a few days old they perch on the lower branches, the only ones which their juvenile weakness will permit them to reach. The mother roosts at their side. When the young leave their parents they continue to live together for some time.

The native Moï hunt them constantly, being very fond of their flesh. Their methods of hunting are very simple. When a number of them discover a pheasant in high, dense jungle where there is little thick undergrowth, they give instant chase. The bird, restrained by its long tail, has not time to take to flight; the running soon exhausts it, and it falls into the hands of the natives. The birds are also shot with poisoned arrows, but the usual method is the use of a snare or trap. This is often used at the season of courtship, when the male easily falls a victim during his preoccupation in displaying. The female, usually perched in a tree, is seldom snared, and this explains the difficulty of securing specimens of this sex. The natives of Annam call this bird *Tri*, the syllable being spoken with an intonation peculiar to their language which cannot be graphically represented.

The account of the capture of the birds by running them down is open to considerable doubt and is probably based on the story of a native. There is no reason why the Annam bird should be any less fleet of foot than its Malayan representative or the argus.

DETAILED DESCRIPTION

ADULT MALE.—All the head feathers, except the ear-coverts and the occipital crest, are short. Feathers of the forehead and crown velvety, brownish black. Lores, a broad superciliary and lower cheeks greyish white. Facial area thickly covered with brownish black featherlets. Ear-coverts dark brown. From the occiput and nape arises a semi-erect, elongated crest, curving backward, the feathers stiffened basally, fine and silky toward the tips. Anteriorly the feathers are dark rufous, becomimg paler and greyer posteriorly until those growing on the nape are glistening silky white.

The chin and throat are white, merging into rufous on the neck. On the hind neck this colour forms only a very narrow collar which passes abruptly into the black and buffy-white pattern of the dorsal plumage. On the lower hind neck we find the basal half of the feather rufous; the distal half black with a single row of two or three large whitish-buff spots down each web. Passing backward the rows increase in number and the spots become irregular in shape.

In some specimens tinges of rufous or chestnut are visible over all the dorsal surface, but this hue is invariably found on the wing-coverts, occurring as faint markings in the black background between the buff spots.

On the tertiaries and inner secondaries the pale spots become rounded, and these feathers present a very regular dotted appearance. As we proceed outward, buff specks become numerous, and on the outer secondaries these have increased on the outer webs to a broken, irregular network of fine lines surrounding the light spots.

A most important character is one that has thus far escaped the notice of describers. Even on the innermost secondary, several orange-rufous spots of good size are visible on the outer web close to the shaft. These are quite hidden, being well up on the feather, perhaps half-way to the base.

These increase in definiteness and number, until on the outermost secondary there are a dozen large black spots distributed along the shaft, each enclosing a distinct spot or semi-circle of deep chestnut near the distal border. In development they are not much inferior to the ocelli on the inner secondaries of *Argusianus.*

The primaries present a very different appearance from the secondaries, but show no approach to the intricate pattern and colours of *Argusianus.* The general pattern is a fine regular network of pale buff enclosing round or slightly elongate black spots. On the outer vane the network is less perfect, the absence of many of the cross lines changing the pattern into a series of buff lines running obliquely to the shaft on a black background.

The back and rump show the usual dorsal pattern of whitish spots on a black ground, but all the feathers show more or less distinct traces of dark chestnut inter-spots, which frequently partly coalesce into a faint network.

The dorsal pattern, carried to an extreme, gives us the specialized appearance of the tail-coverts and rectrices.

On the much-elongated central rectrices we find the ground colour to be a pale slaty blue, paling into black toward the tip and along the outer margin. Everywhere the feather is thickly spotted with round white dots about 2 mm. in diameter. On the outer web these are faintly, and on the inner web very strongly netted with a dark chestnut network. Near the shaft on both webs the chestnut network breaks up into large, rounded rich chestnut spots, with good-sized dark centres, which die out only on the terminal part of the feather.

As we pass to the lateral rectrices, the background of the feathers becomes darker and diffused, and the chestnut network less apparent, the two colours finally mingling and forming a dull olive buff background surrounding the white spots. From the numerous small spots the chestnut vanishes altogether. The lines of central, black-centred, chestnut ocelli, however, remain well developed up to the very outermost pair of feathers, where they are lacking.

The rufous buff of the fore-neck changes abruptly into the body pattern. The ventral plumage differs chiefly from the dorsal in the much greater amount of chestnut and the relatively coarser spotting. For example, a mid-breast or belly feather shows but one or two lines of white spots on each web, each spot with a narrow encircling ring of black, while all the rest of the feather is plain chestnut.

Bill to nostril, 18 mm.; wing, 380; outer tail-feather, 280; central tail-feather, 1500; tarsus, 91; middle toe and claw, 76 mm.

ADULT FEMALE.—Forehead and crown black, becoming brown on the elongated, stiffened, occipital crest, this again changing to greyish white and dull rufous posteriorly. Lores, superciliary, side of rear crown, chin and upper throat dingy, buffy-white.

The mantle is almost monochrome, olive buff faintly vermiculated with dark brown. On the lower mantle, wide, irregular cross-bands begin to be noticeable, becoming more and more distinct as we proceed backward over the wings and tail.

On the black background we find successive buff cross-bars, basally broken into spots and angulated short lines, merging at once and becoming a fine vermiculation, which is lost in the black hue in a mist of buff mottling. This forms a band, which on the secondaries is about 12 mm. wide, and bounded on each side by a clear, black interspace of half this width. On the outer secondaries the black space becomes almost obliterated by the extension of the spots and angulated lines. The markings on the primaries are decidedly rufous, and are in the form of broken bars on the inner webs, and an irregular network on the outer.

The central rectrices show an extreme development of the paler transverse bars, the colour being an olive buff, and the angulated lines beginning almost as soon as the mottling of the succeeding bar has died away. On the lateral rectrices the black becomes more and more predominant. The lower throat shows an area of dark rufous. The ventral surface is like the mantle, olive buff, very finely vermiculated with black.

Bill from nostril, 17 mm.; wing, 320; outer tail-feather, 235; central tail-feather, 400; tarsus, 81; middle toe and claw, 66 mm.

SYNONYMY

Argusanus ocellatus Verreaux MS.; Bonaparte, Comptes Rendus, XLII. 1856, p. 878 [desc. null.].

Argus ocellatus Sclater, Proc. Zool. Soc. London, 1863, p. 124 [desc. null.]; Gray, List Gallinae, 1867, p. 26 [desc. null.]; Elliot, Ann. Mag. Nat. His. (4) VIII. 1871, p. 119 [first description of the four feathers]; Wood, Ann. Mag. Nat. His. (4) X. 1872, p. 67; Elliot, Monograph Phasianidae, I. 1872, pl. 13.

Rheinardia ocellata Maingonnat, La Science pour tous, 1882, p. 210.

Rheinardius ocellatus Oustalet, Annales des Sci. Nat. XIII. 1882, art. 12; Oustalet, Bull. Soc. Philomathique (7) VI. 1882, p. 254 [*Rheinardius*, nov. gen.]; Oustalet, La Nature, 1882, p. 273; Sharpe, Hand-list of Birds, I. 1899, p. 40.

Argus Rheinardi Maingonnat, Bull. Soc. Zool. de France, VII. 1882, p. xxv.

Rheinartius ocellatus Oustalet, Nouv. Arc. Mus. Hist. Nat. (2) VIII. 1885, p. 256, pl. 11; d'Aubusson, Bull. Soc. d'Acclim. 1887, pp. 337, 430.

Rheinardtius ocellatus Grant, Cat. Birds Brit. Mus. XXII. 1893, p. 367; Grant, Hand-book of Game-birds, II. 1897, p. 75; Finn, Game-birds of India and Asia, 1911, p. 44; zur Strasser, Brehms Tierleben, 4th edition, Vögel, II. Band, 1911, p. 53.

Rheinardius ocellatus ocellatus Hartert, Novitates Zoologicae, IX. 1902, p. 538.

MALAY OCELLATED PHEASANT

Rheinardius nigrescens Rothschild

NAMES.—Specific: *nigrescens*, Latin, dusky. English: Malay or Dusky Ocellated Pheasant; Mountain Argus Pheasant.

TYPE.—Locality: Ulu Pahang, Eastern Malay Peninsula. Describer: Lord Rothschild. Place of Description: Bull. Brit. Orn. Club, XII. 1902, p. 55. Location of Type: Tring Museum.

BRIEF DESCRIPTION.—Male: In general, darker than the Annam Ocellated Pheasant. Dorsal spots are white and round instead of buffy and irregular. Rump markings less numerous, larger and whiter. Outer web of central rectrices more of a blackish-brown and more uniform. Female: Similar to the female Annam Ocellated Pheasant, slightly more buffy on the head and ventral plumage.

RANGE.—Central Malay Peninsula.

GENERAL DISTRIBUTION

THE few known specimens of the Malay Ocellated Pheasant have come from the central mountains of the Malay Peninsula: central Pahang, eastern Perak and south Kelantan. It does not ascend to a greater height than four thousand feet, nor does it descend to the low country outside the mountains, although it may be found along the lower river valleys of the interior. Both Robinson and myself have heard its call near Kuala Lipis, Pahang, at only about four hundred feet elevation.

GENERAL ACCOUNT

Along the central Malayan range of mountains on the Pahang side rise innumerable little streams, mere rills at first, which soon gain in volume, rill added to rill, until a good-sized stream bubbles over the rocks and slides smoothly over fallen bamboo stems. If one does not mind wet feet, these stream-beds are by far the most convenient means of exploring this region. Often the sides of the ravines are so precipitous that it is impossible to pass across or along them.

For two nights I had slung my hammock from the giant grasses beside one of these tiny Pahang tributaries and had listened to a new sound. Sometimes, at frequent intervals for a half-hour at a time, the loud call would ring out. It was almost the call of the argus, but there was a strange intonation which attracted my attention at once. I realized at last that it was the evening call of the Malayan Ocellated Pheasant. Of this note Robinson says: "The call is very different to that of the common species, and is readily recognized when once heard, though it is hard to put the difference into words."

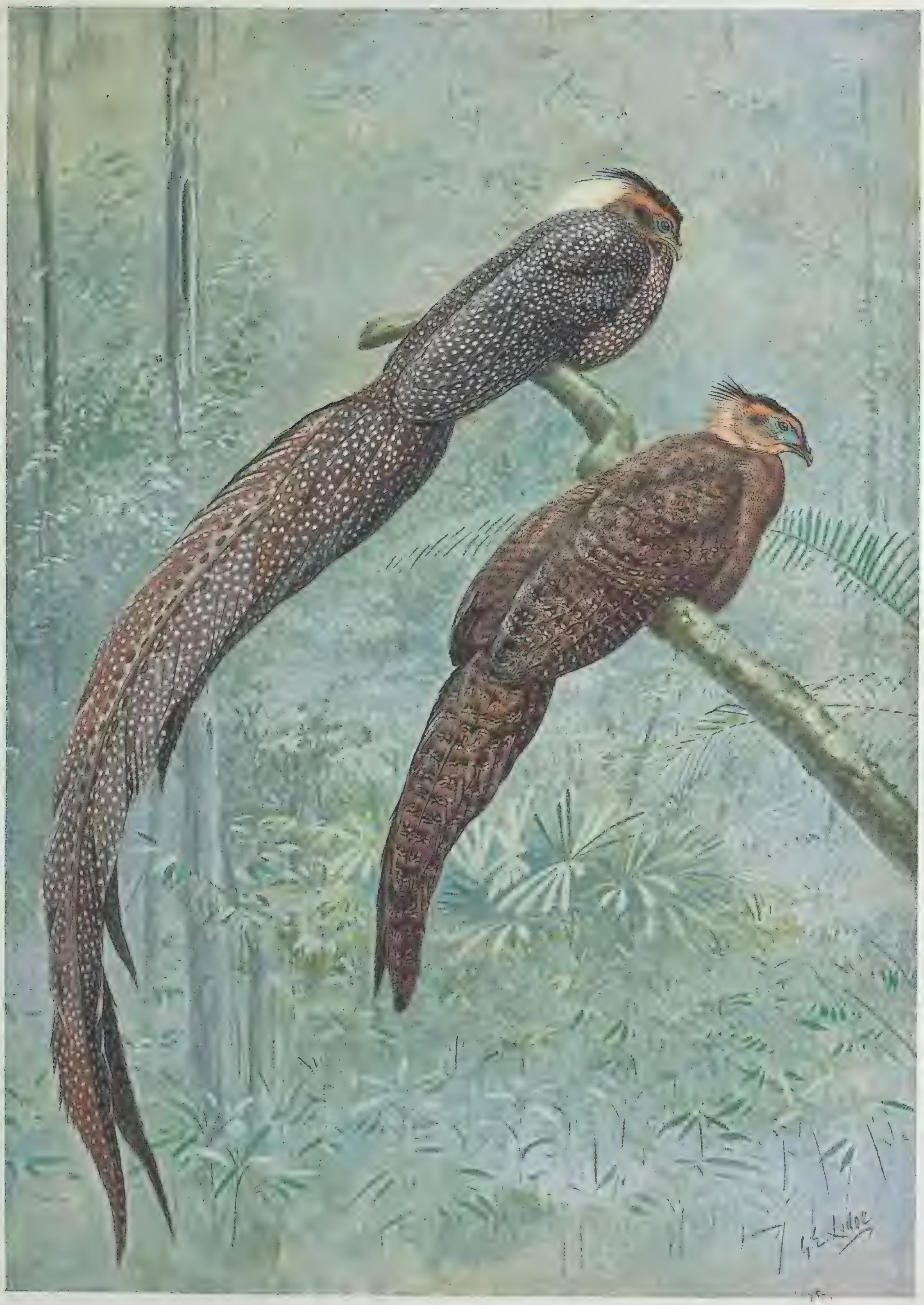
While I never heard the calls of both species of argus in the same evening, yet the difference is very marked. There is a muffled resonance about the cry of the Ocellated Pheasant which the cry of the common argus lacks; it sounds fully as loud, but seems

MALAY OCELLATED PHEASANT

Rheinardius nigrescens Rothschild

The most mysterious of all pheasants are the birds of this group. We live in their neighbourhood, we hear their calls, we find their dancing arenas, and yet, after weeks of search, may catch never a glimpse of the birds themselves. Night after night their call rings out a few hundred yards away, sounding much like the call of the Argus, but with a muffled resonance which is unmistakable. In appearance they recall some Chinese imaginary Phoenix.

PLATE LXXXI.



MALAY OCELLATED PHEASANT.

to be without that penetrating quality which carries the tones of the common argus through fern and bamboo, over ravines and jungle slopes, to such great distances. It is more harmonious, less blatant. I have heard one of the small woodpeckers of the Pahang jungles utter a sound, while much weaker, yet in timbre exactly similar in character to this call of the great black argus.

Disregarding the rumours of tigers and leopards, I crept through the jungle more than once in the dead of night, the damp mist rising thickly from the reeking ground about me, and the white trunks of unknown jungle trees looming up like ghosts. I made my course by compass and broken lianas, and laid it by the occasional wild scream of the bird. Once only I seemed to be approaching. Nearer and nearer sounded the call, appearing almost as if the bird was walking toward me. Then my electric searchlight showed an impenetrable tangle of rotan and thorn palms—a maze of myriad recurved hooks. Even in bright daylight one might not pass through this without carefully cutting a trail, so after listening for a half-hour I turned back.

While I waited, crouched at the foot of a clump of mighty bamboos, my light shut off, I realized as never before the mystery of a tropical jungle at night. A quarter of a mile away the magnificent bird was calling at intervals, in just some such place as I was in.

When my eyes recovered from the glare of the light, I found that the jungle was far from dark. The night was moonless and not a glimmer of star came through the thick foliage overhead. But a thousand shapes of twig and leaf shone dimly with the steady, dull, blue-green, phosphorus glow of fox-fire. Once a firefly passed through the bamboos—a mere shooting star amid all these terrestrial constellations. The mould beneath my feet might turn to peat, or in future ages to coal, but even then the alchemy of fire would be needed to awaken the imprisoned light. Here, from plants, still erect, which were blossoming a short month ago, a thousand gleams shone forth, defying the blackness of night.

Some small animal passed to windward of me, sniffed and fled at full speed. The wings of a bat or other flying creature whistled near, while ever the resonant call of the Rheinarte rang out, mocking my helplessness. The firefly could make its way through tangle and thorns, to the very spot where the bird stood. The small four-footed creature of the night could creep noiselessly over dried bamboo sheaths until his little eyes marked the swelling throat of the calling pheasant. But here was I with a powerful electric light, with the most penetrating of night glasses, with knowledge of savage woodlore, and human reasoning power, and yet with feet shod with noise, with clothing to catch on every thorn—a hollow mockery of a "lord of creation"! Again the bird called and I interpreted its message—the law of compensation. I was helpless to reach it, I was degenerate indeed in the activities of the primitive jungle folk, but I thrilled at the mysteries of the nocturnal life—my pulse leaped at the wild call—not from a carnivore's desire for food or a beastly lust for killing, but because of the human-born thirst for knowledge; of the delights of the imagination which are for man alone.

Although denied a glimpse of the bird itself, I was fortunate enough later to come upon its handiwork. Near the summit of a low rise in open bamboo jungle the dog of my hunter led me to a small cleared space which I knew for the dancing arena of a pheasant. The animal began scratching close by, and investigation showed a few feathers and bits of broken legbones. These together with one large wing feather revealed the identity of the victim as an Ocellated Pheasant.

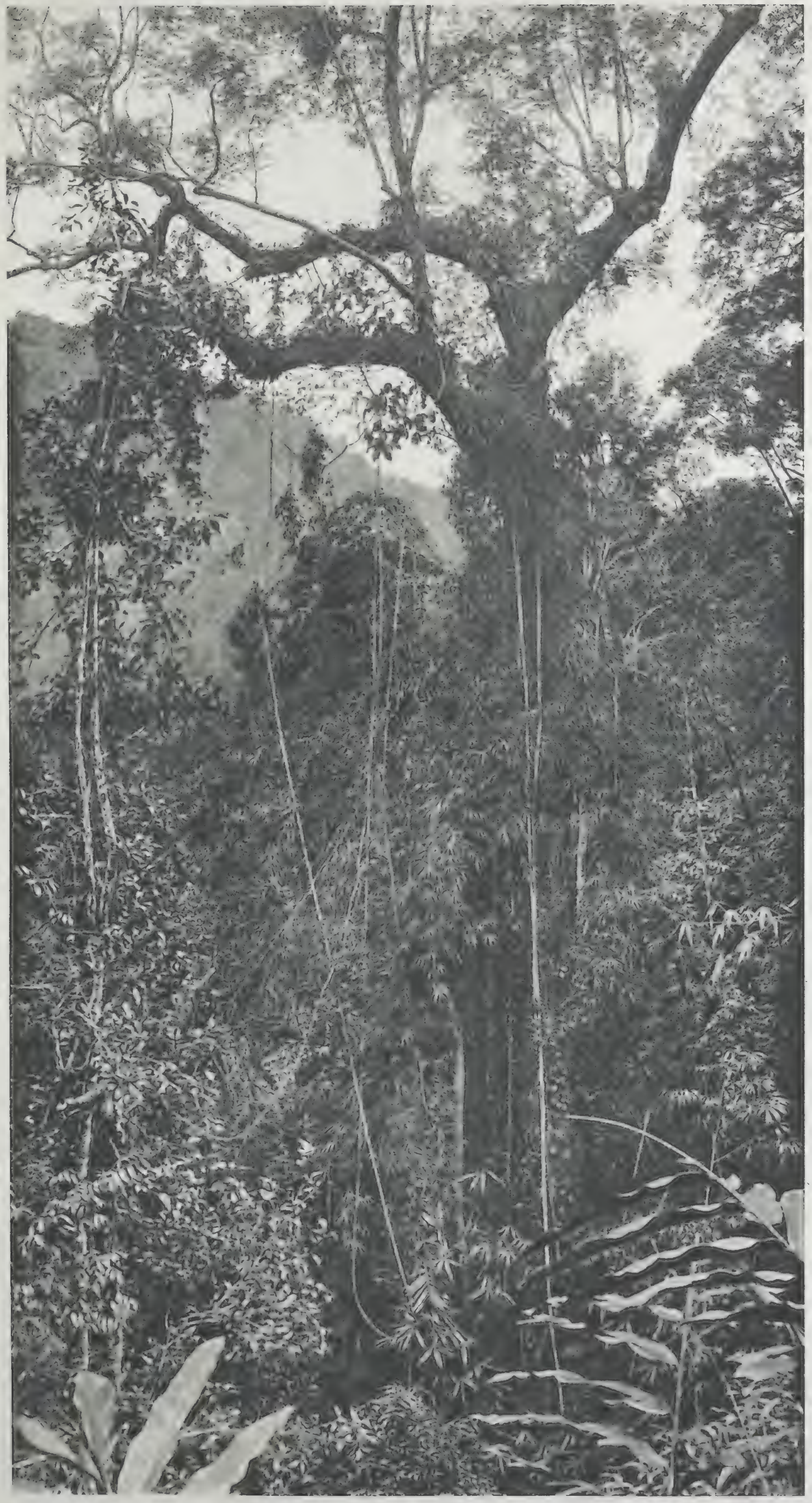
The clearing was not more than two yards across, and was doubtless the first attempt of a young, inexperienced bird. It was not on level ground, and in the centre was part of a young rotan stem which the bird had not been able to remove. A slender woody plant which grew within the arena, had been scraped clean of moss and bark near the base, showing the persistent but ineffectual attempts the bird had made to uproot it. A small stream wound around within fifty feet of the dancing place, and the surrounding vegetation was of low, large-leaved plants and a scattering of tree ferns. While I photographed the spot, a great woodpecker, clad in dull green and wine colour, beat a continuous tattoo on the resonant bamboo stalks. In the middle upper jungles of the Peninsula in which the Ocellated Pheasant makes its home, life other than birds is not abundant, even to the careful observer.

On another occasion I watched by a clearing which I supposed to belong to an argus, but after an hour a calling Ocellated Pheasant approached, never, however, coming within sight, and after circling my hiding-place it made slowly off. As I sat quietly amid the swaying stems of bamboos and the trembling fronds of tree-ferns, babblers in families and small birds in loose flocks of several species occasionally passed, on their twittering, fly-catching paths of life. It was late afternoon and the creatures of the jungle were making the most of the last hours of daylight. Two species of gaudy-coloured squirrels leaped overhead, and now and then a tree-shrew pushed his sharp muzzle around a neighbouring trunk and stared at me, but unaccountably did not give the alarm. Close to me a bee-eater—lilac-fronted, flame-breasted—swooped after the dancing gnats. Long-tailed drongos were courting a small, unornamented female—three of them swooping about her at one time. As they flew and dipped and volplaned, the two, round, feather tips swept after them, apparently wholly unconnected by any physical bond. Two cock broadbills fought continually with constant enthusiasm and equal discretion. In the rare intervals between their long-continued bouts both repaired to the upper air, high above the forest, for refreshment, and there soared about, for all the world like diminutive vultures, now and then dashing sideways after an insect. Three small green parrakeets flew again and again across the pheasant's clearing, and a pair of great sombre-hued woodpeckers bigger than our American ivory-bills, hammered vigorously, sending chips down upon the cleared arena. All these voices and sounds would seem to show that there was no danger near; the usual life of the jungle was undisturbed; but the pheasant knew better. I had neglected some little precaution, and some stray strand of suspicious evidence had warned the bird that all was not well. The woodpeckers might hammer and the drongos scream, but he sensed a something which drew a dead-line about his arena; he called, but half-heartedly, and after a reconnaissance he returned to some unknown covert. I could not let him know that I had no gun and that a half-hour's watch of his unconscious jungle life was all for which I hoped.

One other time and only a transient physical disability prevented me from seeing one of these birds. A pheasant had been calling at dusk, and on my way back to camp I turned aside and followed a narrow game trail to a stream. A loud rustle made me crouch low, but whatever animal was the cause, it made its way off. I waited on

JUNGLE HOME OF THE MALAY OCELLATED PHEASANT

In one very deep, narrow gorge a cool rush of air forever siphoned down from the highlands, soughing through the vine-draped limbs of a mighty jungle tree which reared its head high above the shadowed depths. From this place an Ocellated Pheasant called for six nights in succession, the sound apparently coming from the hillside some distance up the slope, if not from the branches of the great tree itself.



JUNGLE HOME OF THE MALAYAN OCELLATED PHEASANT

general principles for five minutes, and then the call of the Ocellated one rang out directly behind me; so loud was it, I thought at first it came from overhead. Then a second time and my ears rightly orientated it as a few yards behind. The light was failing: in a few minutes it would be dark, and I could hear the bird moving. I was hidden by a barrier of scrub. I attempted to leap to my feet and turned as I rose; but instead I merely fell awkwardly backward. Both of my feet were paralysed, asleep, and would not support me. A second effort succeeded, and I saw the swaying stems close together behind the fleeing bird, but never a glimpse even of a tail feather.

This completes my experience with this rare and excessively wary bird.

The species was first described from three specimens, two males and a female, received by Lord Rothschild. They were collected by native hunters on the Ulu Dong, a river which rises on the slopes of Gunong Benom. Robinson says that he found it to be "by no means uncommon on the lower spurs of Gunong Tahang, apparently being found in the same situations as the common argus, though perhaps it ranges somewhat higher up the hills. Tail feathers of both species were found on the same showing-off ground. Despite our utmost efforts, which included the manufacture of a fence trap, two miles long, with snares every fifty yards, we only succeeded in catching two specimens, of which one was utterly spoilt by a musang before the trap was visited, but dozens of the common variety were secured, which formed a very welcome addition to our commissariat. The single perfect specimen was shot by one of our Dyaks, who had a singular gift for securing rare and shy ground birds."

DETAILED DESCRIPTION

ADULT MALE.—Forehead and central crown of short, velvety black feathers. Lores and narrow lateral crown line, widening posteriorly to behind ear-coverts, white with rufous buff tips. Facial featherlets, lower cheeks and ear-coverts black. Extreme anterior portion of median occipital crest black. All the main portion, silvery white and hairlike. Chin white, throat strongly tinged with buff.

Entire upper plumage black, dotted with round white dots. Few or no irregular angulated lines or network-like pattern, only round, clear, white markings. Rufous secondary markings present on almost all the feathers, but very inconspicuous against the dark ground. Vestigial ocelli practically absent from secondaries, which, like the primaries, show the same dotted white pattern as the dorsal plumage. Central rectrices much darker as to background, otherwise similar to those of the Annam bird.

The markings of the ventral surface show a good deal of chestnut. All the white markings are perfectly round. Iris brown; skin around eye bluish-grey; bill tinged with pink near gape; legs and feet dark bluish-grey. Bill from nostril, 17 mm.; wing, 373; outer tail-feather, 418; inner tail-feather, 1620; tarsus, 96; middle toe and claw, 76 mm.

FEMALE similar to *ocellatus* except for a strong buffy tinge on the lighter head markings. Under surface is also much more rufous buff, parts of the breast and mid-belly being almost free from dark markings. Bill from nostril, 16 mm.; wing, 337; outer tail-feather, 233; inner tail-feather, 375; tarsus, 86; middle toe and claw. 66 mm.

SYNONYMY

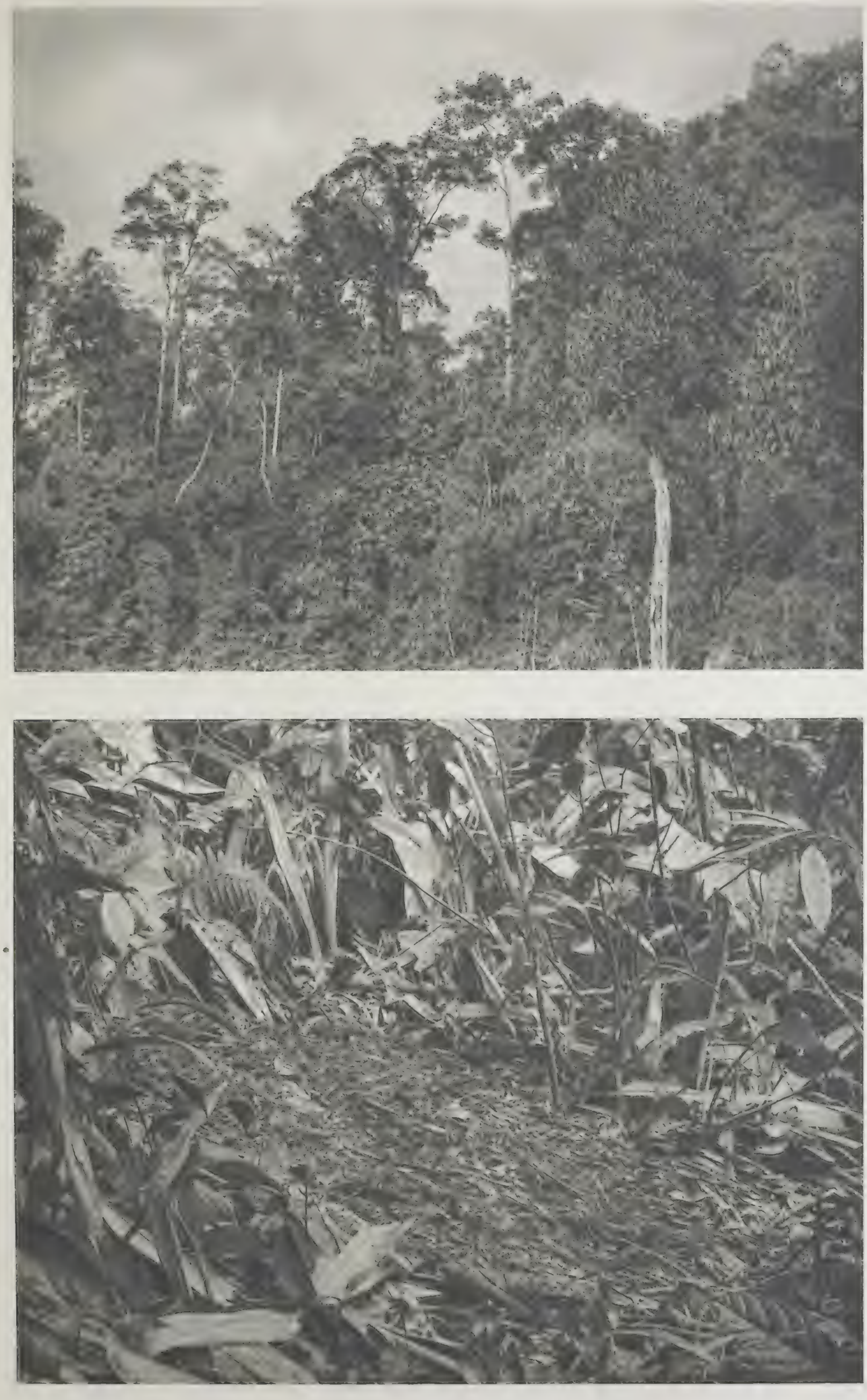
Rheinardius ocellatus nigrescens Rothschild, Bull. Brit. Orn. Club, XII. 1902, p. 55 [Ulu Pahang]; Hartert, Novitates Zoologicae, IX. 1902, p. 538.

Rheinardius nigrescens Robinson, Jour. Fed. Malay States Museums, I. 1906, p. 130. [Gunong Tahan, Batang Padang, So. Perak]; Grant, Jour. Fed. Malay States Museums, III. 1908, p. 56.

Rheinwardtius nigrescens Robinson, Jour. Fed. Malay States Museums, II. pp. 67, 168, 219.

HOME AND UNFINISHED ARENA OF THE MALAY OCELLATED PHEASANT

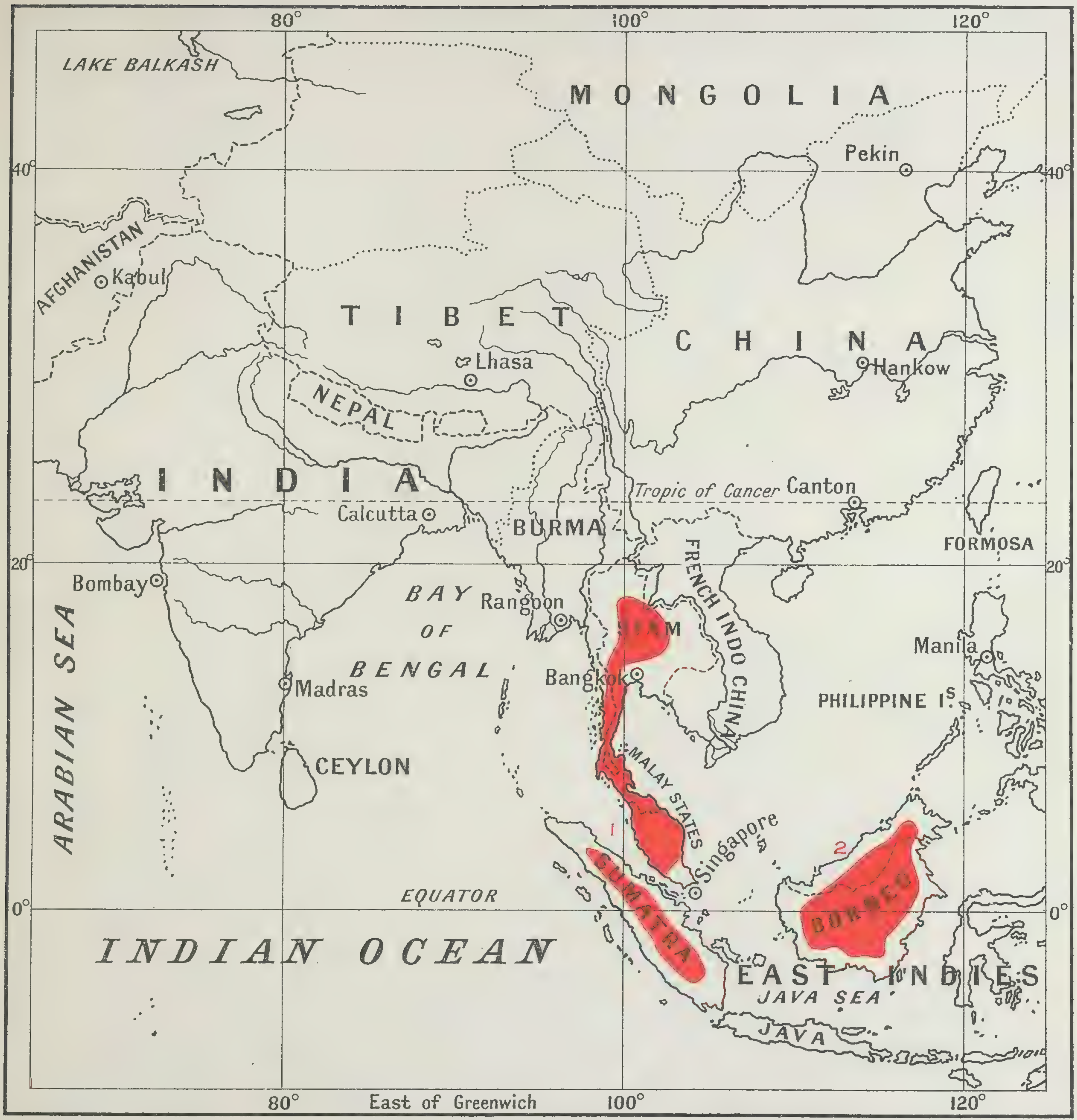
Near the summit of a low rise in open jungle I found a small cleared space. This I discovered was the dancing arena of an Ocellated Pheasant, which had evidently met with disaster, for its bones and feathers were found near by. The clearing was a small one, probably the first attempt of an immature bird, for it was not on quite level ground, and a woody plant growing within its limits had resisted all attempts to uproot it.



HOME AND UNFINISHED ARENA OF THE MALAYAN OCELLATED PHEASANT

ARGUSIANUS
ARGUS PHEASANTS

MAP XIX.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Canton
Calcutta
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Manila
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CEYLON
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SUMATRA
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East of Greenwich

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MAP SHOWING THE DISTRIBUTION OF THE ARGUS PHEASANTS.

Region 1. Argusianus argus

Region 2. Argusianus grayi

ARGUSIANUS

ARGUS PHEASANTS

Order GALLIFORMES

Family PHASIANIDAE

Subfamily ARGUSIANINAE

Genus *ARGUSIANUS*

The Argus Pheasants are in many ways the most extremely ornamented and specialized of all their family. The adult males from beak to tail-tip may measure six and a half feet, although two-thirds of this is taken up by the central tail-feathers.

These birds are near relatives of the ocellated pheasants, but far more specialized. The sides of the head, the throat and the fore neck are bare and rather highly coloured, and the ocelli on the secondaries are marvels of design and shading, resembling marble-like spheres revolving in separate sockets, and all with high lights as exquisite and effective as if carefully planned for some exact and delicate purpose.

The first primary is the shortest, and the tenth the longest. The secondaries are greatly elongated, far exceeding the primaries, the eighth and ninth being twice as long as the first. The tail is composed of twelve feathers, the two central ones of relatively enormous length, being more than four times the length of the outer pair, and slightly twisted near the tip.

The males make and keep clear a large dancing arena, to which they call the females, and where they show off their marvellous frontal courtship display. Spurs are absent. The tarsus is much longer than the middle toe and claw.

The females are smaller and less specialized in plumage and in colour. Two white eggs are laid on dead leaves upon the ground.

ARGUSIANUS

	Type
Argus Temminck (nec Boh., Moll. 1761 ; nec Scop., Lep. 1777) Pig. et Gall. II. 1813, p. 410	*A. argus.*
Argusianus Rafinesque, Analyse, 1815, p. 219	*A. argus.*
Argusanus Bonap. C. R. XLII. 1856, p. 878	*A. argus.*
Argusa Kelham, Ibis, 1881, p. 530	*A. argus.*
Argusinius Oustal. Bull. Soc. Philom. (7), VI. 1882, p. 254	*A. argus.*

The Argus Pheasants inhabit the Malay Peninsula from Lower Tenasserim and Siam southward, Sumatra, and the interior of Borneo.

Two species of *Argusianus* are certainly known, and a third is suspected on the evidence of a single feather in the British Museum:

Malay Argus Pheasant	*Argusianus argus* (Linné).
Bornean Argus Pheasant	*Argusianus grayi* (Elliot).
Double-spotted Argus Pheasant	*Argusianus bipunctatus* (Wood).

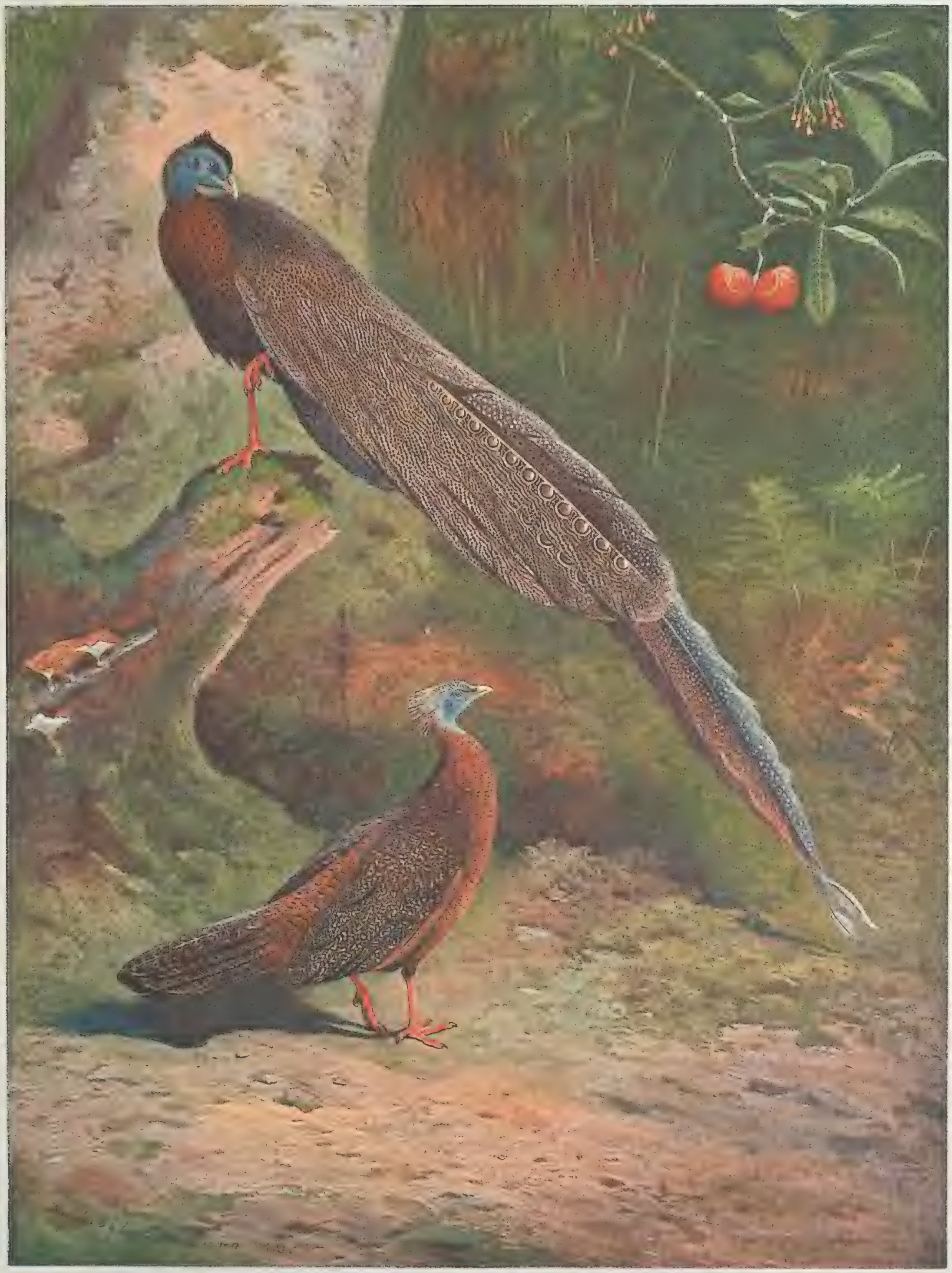
KEY TO THE FORMS OF *ARGUSIANUS*

I. Central tail-feathers enormously elongated; a speckled reddish band on the primaries (males).
  a The primary band on inner web only.
    a′ Lighter plumage markings buff; upper breast dull chestnut . . . . . *argus.*
    b′ Lighter plumage markings white; upper breast orange rufous . . . . . *grayi.*
  b The primary band on both webs . . . . *bipunctatus.*
II. Central tail-feathers not greatly elongated; no speckled band on primaries (females).
  a Collar dull chestnut; ventral plumage rufous . . . . *argus.*
  b Collar bright rusty red; ventral plumage buff . . . . *grayi.*

MALAY ARGUS PHEASANT

Argusianus argus (Linnaeus)

This great pheasant lives a solitary life deep in the wild jungles of the Malay Peninsula. The central tail-feathers measure six feet in length, while the secondary feathers of the wing are enormously lengthened and enlarged for the purpose of display in courtship. The cocks have no spurs, but trust to escape from danger by flight. Argus Pheasants are polygamous, and the cocks take no share in hatching the eggs or rearing the young birds.



MALAY ARGUS PHEASANT.

MALAY ARGUS PHEASANT

Argusianus argus (Linné)

NAMES.—Generic: *Argusianus*, Latin adj. from Argus, the original preoccupied generic name. Specific: *argus*, the mythological shepherd with a hundred eyes. English: Malay or Great or Northern Argus Pheasant. French: Argus géant. German: Argusfasan or Arguspfau. Vernacular: Kuang, Kuau kuang (Negritos); Kuâk (northern Sakais of Upper Perak); Kwâk (central Sakai of Batang Padang); Chîp Kuang (Besisi of Selangor and Negri Sembilan); Kuau (Jakun of Pahang); Kuang raya, big pheasant; Kuang rimba, forest pheasant (North Malay); Kyek-wah (Siamese); Koeweau (Sumatra).

TYPE.—Locality: "Habitat in Tataria Climensi." Describer: Linné. Place of description: Sys. Nat. I. 1766, p. 272.

BRIEF DESCRIPTION.—Male: Head and neck bare for the most part, and blue in colour; top of the head and nape, with short, black feathers; general colour above black, mottled and dotted with various shades of buff; lower back and rump rufous buff, sparsely dotted with dark brown; long central tail-feathers dark grey and chestnut, finely dotted with white; primaries fawn colour, with rows of oblong black spots, a rufous band finely dotted with white on the basal part of the inner web; secondaries with outer webs decorated with a row of large ocelli, bounded by black, yellow in the centre, shading into white and reddish brown; under parts rich chestnut, variegated with wavy bars and markings of black and buff. Female: Long, spiny nuchal crest; neck chestnut, slightly mottled with black; upper parts black, vermiculated on the upper body and coarsely hieroglyphed on the secondaries with pale buff; primaries chestnut, marked with black; below black, everywhere vermiculated with rufous and reddish buff.

RANGE.—Malay Peninsula, from lower Tenasserim and Siam southward; Sumatra.

THE BIRD IN ITS HAUNTS

I CARRIED my big bundle of green cloth, brass rods and field-glasses up the last steep slope and threw them down in utter exhaustion. Three minutes I allowed myself to rest, and then swiftly erected my umbrella tent, stretched the guy ropes and crept within. I was on a jungle plateau on the eastern slope of one of the Pahang Mountains in the Malay Peninsula, and well within the range of the Argus Pheasant. I was far from any habitation of natives, and the jungle was quiet and apparently at rest. But this was a superficial view. I soon saw that there was no rest for me until I had further protected myself. Leeches innumerable were headed my way. So I slipped out and hastily dug a trench around the tent, knowing that the little villains would find difficulty in crossing the gorge of crumbly earth.

From two of my peep-holes I could command a considerable extent of partly open slope, half-way down which several great fern-coloured boulders upreared themselves. Behind was dense jungle, and to my left a feathery tangle of tree-ferns.

For some time after I entered the observation tent it was difficult to realize that I was in the heart of the tropics, less than four degrees from the equator. It was an afternoon in late October, and a cold damp wind was blowing, soughing through the trees overhead with a low, mournful roar. Every gust brought down a shower of yellow and maroon leaves about the tent. Surely they, like yonder line of crinkled brakes, were seared by an early frost! The air held the very essence of winter. A faint sound out in the valley caught my ear, and a moment later a whistle of wings and a chorus of shrill notes, *peep-sweet! peep! peeep!* came from a compact flock of sandpipers; another suggestion that this was but a northern autumn day. Soon afterwards a loose flock of wagtails alighted near by. The migrants from far to the north had begun to arrive.

But now a sudden, wild rush of wind brought a warm tropical torrent. A thatch of living palm fronds overhead partly turned the hour's rain which then began, and my ditch served a double purpose and kept my tiny enclosure almost dry. It was over, as suddenly as it had commenced. The sun, now hidden from my direct view by the wall of the opposite slope, came forth and flooded the upper jungle and the low-lying rain clouds, and not ten yards away a beautiful long-billed partridge stepped daintily out of the ferns and shook the moisture from its feathers. Such wonderful tints as it bears on its back—the hue of every damp twig and bit of moss and sodden leaf—all blended harmoniously, excelling even our woodcock and whip-poor-will, and equalled only by the great podargus goatsucker. Twice or thrice it called, a sweet, long-drawn whistle, which died in the mists of the lower valley, and then the bird went on down the slope.

A family of white-throated, crested bulbuls found my tent and from all sides shrieked their surprise and wrath, and almost made me give up my vigil in disgust. Two days had already passed and I had caught not a glimpse of a pheasant, so I waited a few minutes longer for the birds to tire and go. They soon concluded that my shelter was only a new sort of vegetable growth and they too went on.

When dusk had begun to close down my reward came. A rustle of the tall ferns behind was the only warning and forth there shot, running at full speed, two Argus Pheasants, both females. At the first glimpse of them, in my excitement, I forgot all caution and crawled half-way out of the tent opening, watching them breathlessly. They came straight on, silent except for the swish of leaves against their breasts, wings held partly raised, heads and necks low and stretched far out. This I saw at a glance. Then the first turned at right angles, breaking her momentum with a single, full sweep of one of her wings and vanished into the dark depths of the great tree-ferns. The second female ran on until she reached the first outjutting boulder, and after a moment of splendidly poised indecision she sprang into the air. Two or three wing-beats were all that were necessary to give her steadiness and momentum, and then on down-curved pinions she scaled out of sight into a dense blue cloud of mist hanging over the valley. Just as I have seen a tiny bob-white scale over a Virginia field, just as a tragopan leaps from a snowy Himalayan ridge, so this great pheasant rocketed through the tropical air to safety far below.

Another loud rustling in the undergrowth! I could even see the twigs and leaves moving. But nothing came forth, and though I ran at full speed straight to where I had heard and seen the commotion, the jungle was silent. What the pursuer was I never knew, but it was a dangerous foe indeed which thus could frighten such wary birds to seek safety in the open. They must have been set upon suddenly, a few yards from where they appeared to me. I waited until after dark, but heard nothing. Then, when the purple night had closed down, from across the valley, muffled by the dense forest and the padding of mist, came the loud call of the male Argus, standing perhaps in his wonderful arena, braving the dangers which such a summons must draw toward him, risking all for the sake of a mate.

GENERAL DISTRIBUTION

The Malayan Argus Pheasant is not uncommon throughout the Malay Peninsula from southern Tenasserim and Siam to south Johore. It is entirely absent from the swampy littoral zone and from the higher mountains. It is not found on the islands of Singapore and Penang, but is numerous on Pangkoo in the Dindings.

In Sumatra it has been recorded from the eastern side of the island, nearest the Malay Peninsula, and I know of its occurrence in the extreme southern tip of the island, where, although the country is low, with considerable wet land, these birds could be heard calling every night.

GENERAL ACCOUNT

Few white men have either shot or seen the Argus Pheasant in its wild home, because there has been no deliberate attempt to circumvent the birds, or to adapt one's approach to their peculiarities of life habits. I was very anxious to make as thorough a study as possible of these marvellous creatures, and at first I was pessimistic, being told that I should be able to get no farther than hearing the birds. My studies were made chiefly in Sarawak with the Bornean Argus. Almost without exception, however, the habits of the two are identical, and a composite of my observations on both species will rightly represent the respective habits of either one.

Many of the habits and a considerable portion of the life history of the Argus Pheasant are affected by its remarkable practice of creating a special dancing-place in the jungle, a cleared arena where it may display before the females. This I shall describe later on; here I mention it merely to show the influence which such a localization has upon its life in general.

Most pheasants have a favourite roost to which they resort night after night, and many show preference for special feeding-grounds, where they may be found by day. But the Argus, during the long season of courtship, is localized in the unusual way I have mentioned. Thus for many months in the year we may state with certainty that its home range is extremely restricted, and any given male will probably wander but a short distance from its dancing-ground.

Its favourite haunts are steep and dry hillsides, ranging from five hundred to three thousand feet elevation, and in the central Malay States at least a preference is shown for slopes clothed with such stemless palms as the bertam, *Eugeissonia tristis*. The dancing-grounds of the Argus have been found as high as five thousand feet near the head-waters of the Perak River, but this is far above their usual life zone. We know that these pheasants show a decided partiality for certain kinds of fruits, but whether this ever results in the birds making any extended journeys in search of such food we do not know. They certainly undergo no migration for climatic causes, but during the moulting season it appears that they do take to deeper, less open jungle. We may judge that this is the case from the fact that few or none are trapped by the natives at this season, in the very places where during other months they are constantly heard calling and are occasionally captured.

The Argus Pheasants, in the amount of feather extent and surface, are excelled, if indeed they are even equalled, only by the peacocks. While in general colouring they are excellently adapted for concealment among the lights and shadows of the jungle, yet only once have I seen any even unconscious realization of this fact, and that in the Bornean species. They usually choose to run at once. Compared with the other pheasants with which I am familiar, they are wary and shy, but not to the extent to which they are often credited. Their crepuscular and nocturnal habits and their extremely acute sense of hearing are the real causes of their apparently superlative wariness. So the descriptive terms "abundant" and "common" are almost meaningless. Compared with birds which live in flocks, or with the most widespread jungle species, neither term would be correct, for we are left with no comparative adjective.

The loud call is the chief, often the only source of computation, and the frequency and loudness of this utterance, together with the ventriloquial quality which is imparted by hearing it through the walls of a native house or even a tent, would tend to make one exaggerate the actual numbers. I have heard six distinct birds calling at once, but this is very unusual, and two at the same time is not at all a common occurrence. The jealousy with which each male guards its display ground and the adjacent territory is a factor which tends to limit the numbers of birds in any given district, and their solitary habits give a final emphasis to this limitation. Thus the discussion of their comparative abundance is not a question of comparison at all, as it depends upon factors so peculiarly Argusine, and wholly unlike those, for instance, which concern the numerical distribution of more or less gregarious pheasants like the kaleege. Although the courtship and its accessory properties are more elaborate than in the case of any other species of pheasant, yet the social instinct is almost absent, and the Argus are probably the most solitary of their family, correlating with this a confirmed polygamy. The mother-love and guardianship of her chicks is faultless, and this association exhausts the social cravings of the species. There is no assembling, either accidentally, as in the vicinity of some unusual abundance of food, or distinctly social, as in a pair or more roosting close to one another.

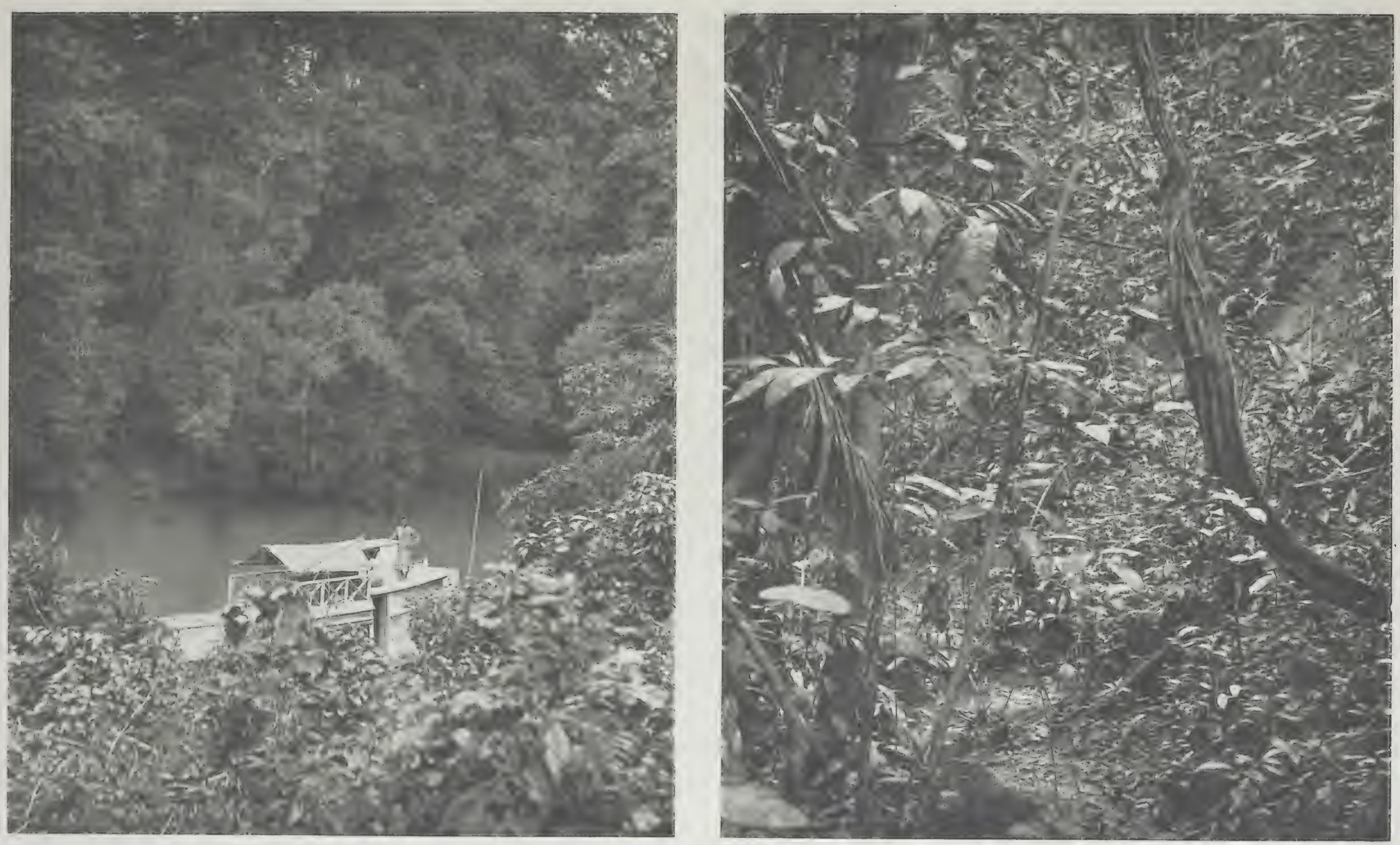
The slender character of this physical association is reflected by the voice of the male, which is probably equalled only by that of the peacock. The solitary wanderers require a voice of extreme loudness to guide them to one another. It is the one physical attribute by which the presence of the bird may immediately be realized when its haunts are entered. To the Malay ear the cock Argus calls *kuau* and *kuang;* to the wild Sakai *kwâk*, to the Siamese *kyek*, while the native of Sumatra has translated the cry into the syllables *koeweau* or *kuaow.* All these have come to be the general names of the birds in their respective countries—wholly onomatopoetic in origin. In a Malay poem, descriptive of the birds of Sumatra, the Argus Pheasant is thus aptly described: "In the superb and many-coloured Kuaow, it is impossible to discern a single fault save one—the difficulty of pronouncing its name."

When nothing disturbs the calling of the birds they seem to hold quite regularly to distinct peculiarities in the tempo or timbre of the cry. On the occasion of hearing six birds at once, I could differentiate the calls of each from one another, either by greater or lesser intervals of time between each utterance, or by individual quaver, inflection or other modulation. I believe that the call of the adult males is always given from the

JUNGLE HOME AND DRINKING-PLACE OF THE MALAY ARGUS PHEASANT

In my houseboat on the Pahang River I penetrated to the haunts of the Argus Pheasant, and at night, as I lay in my bunk, listened to their loud, persistent calling. It is a strong, penetrating, single note, *kweau !* and reaches far through the jungle, summoning the female, and doubtless at times inviting danger as well. It is possible to distinguish between the voices of adult and immature birds, and even between those of individuals when these are heard night after night.

At sunset, just before the calling begins, the birds come down to drink from some pool near the border of a stream.



JUNGLE HOME AND DRINKING PLACE OF THE MALAYAN ARGUS PHEASANT

dancing-place. Lying in my hammock, night after night I have heard the cry of an Argus, distinguished by a marked inflection, come from the summit of a ridge where I knew was an occupied dancing-ground. The less powerful and more throaty voices of young males are unmistakable, and another identifying character is their nomadic quality. I have heard such a bird become audible over the ridge on one side of which I was concealed, and by its rather frequent utterances I was able to follow it on its course down to the narrow stream at the bottom and up the opposite slope. Whether or not the adult males ever call away from the dancing-ground, I have at least never known one to be audibly motile as in this case.

Judging by the time of calling, Argus are decidedly crepuscular or nocturnal. They begin almost invariably just at sunset, the calls increasing in vigour and number as the night shuts down. After midnight they diminish unless there is a bright moon, when the vocal summons is renewed, and continues until daylight. On cloudy days it is not uncommon to hear them, but seldom in the bright glare of sunshine. It is unquestionably true that during the moment of utterance the birds seem to be quite deaf, and by advancing only during those fractions of time, one can get quite close to the calling pheasant. With all the woodcraft of which I was master, I was unable, however, in this fashion, to come within sight of the bird. Always, when I was still several yards away, some noise of leaf or twig, inaudible perhaps to me, would warn the bird, and, unless I retreated, I might wait an hour, or as long as the leeches would permit, but the bird would give no more warning of its presence. Twenty minutes after I reached camp, *kweau* would again ring out—with, as I fancied, an added twang of derision.

Kweau represents the note to my ears as most usually heard, some birds snapping it off short, others dragging so that all the vowels are distinct. Usually it sounds like a double note, and occasionally brings to mind the jolly *wah-hoo* of the wa-was or gibbons. This cry is often uttered singly, after which there is a pause, the bird apparently listening, both for the approach of a mate and for danger. Now and then, moved by I know not what emotion, there comes a rapid succession of *kweaus*, ending in a long-drawn-out and very loud one. It is an extremely powerful and penetrating sound, and with the help of the wind must be audible at a very great distance. Davison, who gives the voice of the male as *how-how*, says that the call of the female is "quite distinct, sounding like *how-owoo*, *how-owoo*, the last syllable much prolonged, repeated ten or a dozen times, but getting more and more rapid, until it ends in a series of *owoo's* run together." Of this I know nothing. I have heard the female call her chicks only in the orthodox language of hens in general, a low cluck, with a still more subdued murmuring as a slight warning, and a single, sharp, indescribable note of alarm when danger threatened.

Although with a greater surface of wing than almost any bird, this excess is for display, not for alar function, and the cock Argus Pheasant is a heavy, poor flier. But it can go rapidly enough on occasion, as I have been fortunate enough to witness. I once saw a dog playfully attack a captive but full-winged male Argus. At the first rush, the bird leaped high in the air and let the animal pass beneath him, and before the dog could turn, it half ran, half leaped along the dog's back trail, and after three or four flaps rose and beat swiftly upward to a branch. It was a beautiful sight, the long, pliant secondaries bending gracefully upward at the impact of air on each downstroke, while the tail-feathers waved and undulated behind, forming, under the conditions, the most conspicuous part of the entire bird. The method of escape, as we have already seen, is by running, the sturdy legs carrying the bird at great speed. But its hearing is so acute that it must be seldom that the Argus has to resort to full speed. In its usual gait the Argus cannot be said to be beautiful or graceful. When we see it in captivity walking slowly about, we have a sense of being behind the scenes, with beauty for the present sacrificed to utility; when its wings are folded it is like a four-masted schooner in port with sails furled and under bare poles. But when we have actually seen the display, and know the marvellous possibilities of those folded wings, we forget the unpleasing gait and the over-balanced effect of the furled pinions. Except when actually in display the Argus is best when running at full speed or in flight. The female is far more graceful at rest than her mate.

DAILY ROUND OF LIFE

I was able to gather much more data as to food in the case of the Bornean Argus, for the birds which I secured in the Malay States almost invariably had empty crops. The only note I can find in literature is that they feed on fallen fruit, which is swallowed whole, one, about the size of a prune, being an especial favourite, and the birds also eat ants, slugs and insects of various kinds. I found traces of ants and very small mollusks still in their unbroken shells in the crop of one bird. I think the above enumeration covers the diet fairly well.

As to roosts, I must again refer to my account of the Bornean bird. In the case of adult males this seems invariably to be near the dancing ground. In captivity the hen and her chicks roost together from the third week until the following year.

As regards friends and enemies, we know but little. I have never known the Argus to be warned of danger by babblers—it asks naught of such service, being well able to depend on its own senses, which are of the acutest. Such a habit of advertising its whereabouts by the loud call, and unmistakably identifying its usual haunt by the conspicuous clearing, would result in the swift destruction of any species of bird endowed with ordinary means of perceiving danger. From what I observed, both the ears and eyes of the Argus are very patently superior in keenness to the corresponding senses of other pheasants. I have described the flight of two females from some real, but to me unknown, danger, and in this connection it is worth while to repeat Davison's account of the exceedingly interesting but wholly bloodless encounter between an Argus and a Malayan crested fireback. "I had stalked an Argus, and while waiting to obtain a good shot, I heard the peculiar note, a sort of *chukun*, *chukun*, followed by the whirring noise made by the male fireback, and immediately after saw a fine male fireback run into the open space, and begin to chase the Argus round and round its clearing. The Argus seemed loath to quit its own domain and yet not willing to fight, but at last, being hard pressed, it ran into the jungle. The fireback did not attempt to follow, but took up a position in the middle of the clearing, and recommenced the whirring noise with his wings, evidently as a challenge, whereupon the Argus slowly returned, but the moment it got within the cleared space the fireback charged it, and drove it back into the jungle, and then, as before, took up his position in the middle of the space and repeated the challenge. The Argus immediately returned, but only to be again driven back, and this continued at least a dozen times; and how much longer it would have continued I cannot say, but a movement on my part attracting the birds' attention, they caught sight of me, and instantly, before I could fire, disappeared into the jungle. The Argus never made the slightest attempt to attack the fireback, but retreated at once on the slightest movement of the latter towards it, nor did I see the fireback strike the Argus with either bill, wings, or spurs."

The spurless Argus would have had little chance against the well-armed fireback in a more serious set-to, and discretion is doubtless its usual policy. Nevertheless, I am certain that fierce encounters take place between adult male birds and youngsters aspiring to a ready-made arena. Here again I must call upon my Bornean evidence for proof of this assertion. In leaving the subject of enemies we should stop for a moment and give the Argus credit for maintaining itself, handicapped as it is by vocal, alar and terrestrial phenomena, all of which, taken in connection with its defencelessness, are assets to its enemies. Its continued existence under these circumstances is one of the most splendid achievements of life to be observed among the whole class of birds.

HOME LIFE

The entire home life of the Argus is influenced by its peculiar habits of life. Such an elaborate preparation for courtship as is furnished by the trio of vocal calling, specialized place for display and the marvellous feather elaboration can hardly be supposed to function for only a short time, or for the wooing of a single mate. And so we find that the season of courtship is an extended one. The calling, indeed, is kept up almost throughout the year, always excepting the two or three months of moult, and as chicks still with down attached have been found in February and in August, we can state with certainty that in its own haunts the Argus breeding season extends well over half the year, and probably much longer. Many of the facts in regard to captive birds are of value here, and we find that they correspond quite closely to the habits of the bird at liberty.

The most remarkable thing about the Argus is its habit of clearing a space in the heart of the jungle for the purpose of displaying its plumage to the female. I shall go into the details of this phenomenon more fully in my treatment of the Bornean Argus, but in a word, a space, roughly circular, four to six yards across, is by some means cleared of all growing and dead vegetation, not even a spear of grass or a tuft of moss being allowed to remain. This arena is usually on the summit of a hill, or at least on the top of a ridge, seldom on low or level ground. An exception are the Argus which inhabit the extreme southern tip of Sumatra, nearest Java. Here the country is low and flat, and much of it is rather swampy. The eruption of the neighbouring island volcano of Krakatua killed almost all the old jungle growth of this district, the branches being broken by the weight of stones and ashes. The new forest consists of very dense undergrowth and young trees, with here and there a solitary survivor of the old primitive jungle. Elephants and Argus Pheasants are very abundant here, and the dancing-places of the birds in this strangely metamorphosed region are built on small, dry oases. To such a jungle arena the male Argus entices the hens by his loud *kweaus*, and then displays his plumage to them; the result intended being his acceptance by the hen as a mate, a brief period of association and then separation again, the hen to rear a family, the cock to take up his calling for another female of his species.

The display of the Argus is the climax of all the phenomena I have mentioned above. Throughout all the long period of feather growth and the subsequent months of calling, the ornamented feathers are concealed by the closed wings, and not until the female appears, and, I am inclined to think, only after she has returned again and again to the dancing arena, is the final display accomplished. The wings of the female are normal in character, but in the male Argus the primaries are ornamented with brilliant colours and a complicated pattern, while the secondary feathers are enormously lengthened and enlarged in every way, and ornamented with a row of twenty or more ocelli, more than 25 mm. across. In addition to these marvellously shaded eyes, the webs are marked with oblique stripes and rows of dark but richly coloured spots, reminding one of the tawny markings on the coats of some of the large carnivores. At the moment of display the Argus faces the hen, and spreads his wings to their widest extent, at the same time bringing them down in front until they meet in front of his head, the two outermost primary feathers lying parallel side by side, their tips resting on the ground, and the innermost secondaries completing the great feather circle over the back. The tail is also erected and somewhat spread, although from the view-point of the hen the two long central feathers projecting high above the wing fan are all that is visible. The general effect is of a great, vertical, concave screen or fan of feathers, the bird itself, body, head and feet, being completely hidden from view.

Naturally the bird is rather anxious now and then to see what effect the display of his beauties has upon the female, or if indeed she is still present; and to accomplish this the head is poked through between two of the feathers, either of the right or left wing, a momentary glance taken, and the head withdrawn. Thus through the peep-hole in his living curtain the feathered actor is able to keep watch upon his audience. In old males, shot toward the end of the breeding season, it is possible to locate this peep-hole by the rather disturbed, frayed condition of the web in its immediate vicinity. It seems to be confined to one side, each individual Argus being either right or left-winged in this respect.

I have seen this display a number of times in captivity and once in a dancing arena in Sarawak, and, as is the case with all pheasants, if not indeed with birds in general, the female shows not even a momentary passing interest. The sudden raising of the wings sometimes startles her, making her retreat a few steps. Usually, however, like peahens before the display of the peacock, she goes on quietly feeding, often even turning her back upon the splendid performer. There is no question in my mind that the wonderful colouring, the elaborate ball-and-socket illusion of the ocelli, the rhythmical shivering of the feathers which makes these balls seem to revolve—all are lost, as æsthetic phenomena, upon the nonchalant little hen. She in no wise reacts to their beauty, nor spends a moment in conscious admiration or study or calculative comparison with other exhibitions which she may have seen on neighbouring arenas. The effect on her is wholly subjective. Nevertheless we have no right to say it is any the less effective, or that the quality of the first summons, the vigour inspiring the display, the character of the feather-trembling, with its audible and ocular consequences—that all these do not have a profound influence, whether wholly subconscious or hypnotic or through some sense of which we know nothing. This may be some pre-æsthetic, or ante-artistic sense, which, only in us, has risen to the level of our conscious eyes and ears, that we may look, and listen, and know.

It is well occasionally thus to theorize. At least it serves to break through the barrier to progress, which the term "coy female" and its equivalents have raised. I think we shall find that some such explanation is necessary. Darwin's ideas are those which we as human beings would prefer to accept. He says: "The Argus Pheasant does not possess brilliant colours, so that his success in love appears to depend on the great size of his plumes, and on the elaboration of the most elegant patterns. Many will declare that it is utterly incredible that a female bird should be able to appreciate fine shading and exquisite patterns. It is undoubtedly a marvellous fact that she should possess this almost human degree of taste. He who thinks that he can safely gauge the discrimination and taste of the lower animals may deny that the female Argus Pheasant can appreciate such refined beauty; but he will then be compelled to admit that the extraordinary attitudes assumed by the male during the act of courtship, by which the wonderful beauty of his plumage is fully displayed, are purposeless; and this is a conclusion which I for one will never admit." I feel as strongly on this last point as did Darwin, and the idea that all this delicate interrelation of two birds is mechanical and the manifestation of automata, of organisms controlled by positive and negative tropisms, is equally unthinkable. It is one of those cases where we should be brave enough to say, "I do not know," and we should not give up the problem because it appears to lead to the psychic or the metaphysical.

In the display of the Argus Pheasant we have a most elaborate setting, stage and properties, with an actor, who in turn is both company and orchestra, all unquestionably for the benefit of an audience which assembles one at a time, and appears utterly and altogether bored. Yet the plot is the plea of creation, and on the success of the act depends the continual existence of the entire race. With such an acme of preparation and effort on one side, and apparent utter indifference on the other, we may be pardoned for groping about for some leaven of balance, some explanation of a situation wholly inexplicable upon known grounds. The tremendous importance of the final *dénouement* demands that we give it more than a passing reference.

It is so easy to understand the most elaborate and specialized apparatus for physical attraction. Even the evanescent particles, immeasurably minute, which stream from some tiny gland on the body of a female moth and float away for a half, even for a full mile, are understandable. And our minds can readily grasp how, even at this great distance, a waiting male may catch the scent and come through forests and over plains up wind to his mate. The summons to the dancing-place is plain. The female is attracted, as we have been, by the reiterated call, but we cannot as yet fathom how she can be influenced and won by some unknown effect or quality of a display which to us expresses in a high degree the fascination of beauty, of pleasing symmetry and of harmonious colouring and pattern. Some day we may find the certain clue; now we can but picture in our minds the dense Malayan jungles sheltering scores of these marvellous performers, going faithfully through their whole scene at the risk of their lives, listening and hoping for the appearance of the hen, the winning of which means the fulfilment of the destiny of the Argus Pheasant.

These birds are decidedly polygamous, and the association of cock and hen is at most only of a few days' duration, when she leaves and the male again renews his calling, biding his time until a second appears.

I found the nest of an Argus Pheasant in Pahang, well up on a mountain slope. It had served its purpose and the chicks had left, but not many days before, as the remains of the two eggs which had been the complement were only beginning to become discoloured and to sink into the mould. They were in sufficiently large pieces and with the surface in good enough condition to be certain of the species, but the final proof was afforded by a few feathers attached to the débris in the nest. Pheasant-like, there was no nest proper, the slight depression in the ground being still faintly discernible, and the nest lining was only the dead leaves which were already on the spot. It was sheltered by a low, sweeping, flowering bush, which grew from the outer base of an outjutting rock, the nest being on a little level talus of earth below the boulder, and close to the steep slope of the mountainside. As well as I could judge it was at a thousand feet elevation and on an eastern slope. The growth was palm and a peculiar kind of bamboo which I had not seen elsewhere.

I can find no support for the often-quoted statement that seven or eight eggs are laid. Of many layings in captivity, all have been of two; the nest I found had contained two, and a wild hen which I dissected was about to deposit two eggs, while the remainder of the ova showed no signs of development. I also doubt whether the bird ever "builds a rude nest," as Davison states. The two eggs which are the full complement of each normal set are in shape rather blunt ovals, smooth and with a fair amount of gloss. The ground colour varies from pale reddish buff to a dark cream colour, and they are freckled with pale reddish brown. The distribution of these small spots and freckles shows considerable variation. They may be coarse and evenly distributed over the whole shell, or very minute and clustered around the two ends. Again, the larger end may be marked by good-sized irregular blotches of pigment, or the concentration of colour may occur at the smaller pole. The extremes of measurement are 60·5 and 66 mm. in length, 46 and 48 in width, the average being 63·8 by 47 mm.

The length of incubation and the general relations of the chicks to their parent I shall give under the heading of Captivity. I say "parent" advisedly, for the cock, as far as we know, takes no share in the home life of the species. When he has mated with the hen, his part is finished, and she goes away by herself, founds her home, hatches the young birds and rears them without any assistance.

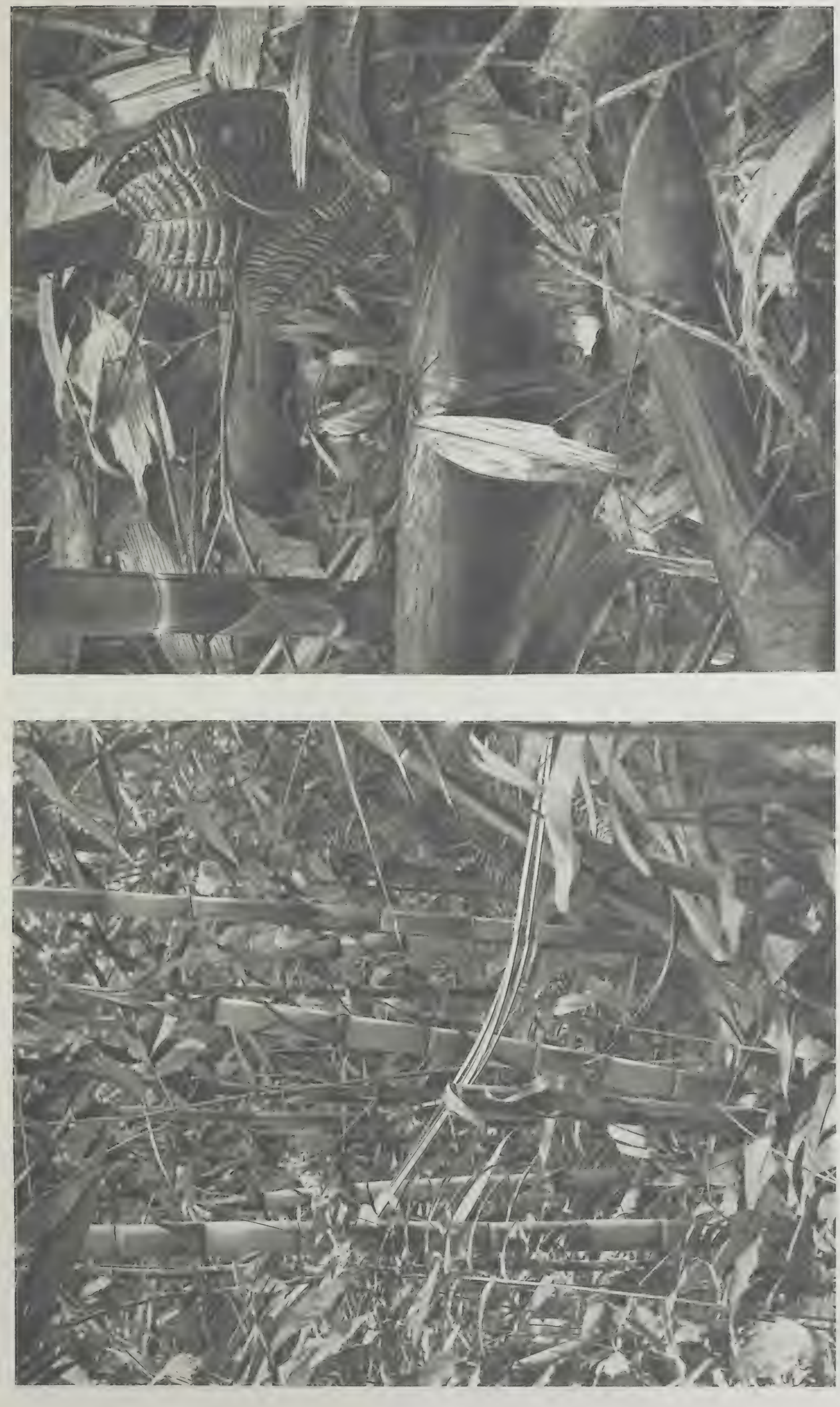
RELATION TO MAN

The common method of capture of the Argus Pheasant by the natives is by means of a snare or noose, the latter usually being attached to a bent sapling which jerks the bird clear of the ground. When once the dancing-ground is found, it is not a difficult matter to capture the bird which makes use of it. The natives sometimes erect a low bamboo or brush fence entirely around it, leaving several openings, each furnished with a noose attached to a sapling, so that at the first approach of the bird it is certain to be ensnared. The most spectacular way of capture is by playing upon the very enthusiasm of the bird, its anxiety to keep its dancing ground clear and its remarkable persistence

NESTING JUNGLE AND RECENTLY USED NEST OF THE MALAY ARGUS PHEASANT

The only nest I could discover was a deserted one well up on a mountain slope in Pahang. There had been no attempt to collect materials, the eggs having been laid and hatched on the debris of the jungle floor. The surrounding growth was palm and bamboo, and the bird had worn a path to the nest through the thick underbrush, a trail which was even now perceptible, although the broken shells of the two eggs had begun to sink into the mould.

[This Plate has been lettered "Malayan Ocellated Pheasant" in error.]



NESTING JUNGLE AND RECENTLY USED NEST OF THE MALAYAN OCELLATED PHEASANT.

in this object. I have described how the bird allows not a leaf or twig to remain upon its jungle arena over-night, and how sedulously it strives to keep every bit of débris away from its small clearing. At the edges of this area I have often seen stems of some tough woody growth which protruded somewhat toward the clearing, which were barked and scraped apparently by the efforts of the bird to uproot them. The mould beneath showed traces of the long-continued trampling of the bird, as it circled the obnoxious obstacle, striving ever to get a better purchase.

The Besisi, the Sakai and in some districts the Malays themselves take a cruel advantage of this perseverance. Several long, slender slivers of bamboo are split off, the edges of the silicious outer tissue being sharp as razors. One of these is bent double and sunk deeply into the ground near the centre of the pheasant's dancing-place. The bird, on discovering this unsightly thing, an apparently new-sprouted vegetable growth, attacks it at once and from all sides attempts to uproot it. Its bill slips over the polished surface, and sooner or later, in its vigorous efforts, the sharp edges come into contact with the thin bare skin of the neck, and it is seldom that the bird is not found dead, or dying from the loss of blood, near its display ground.

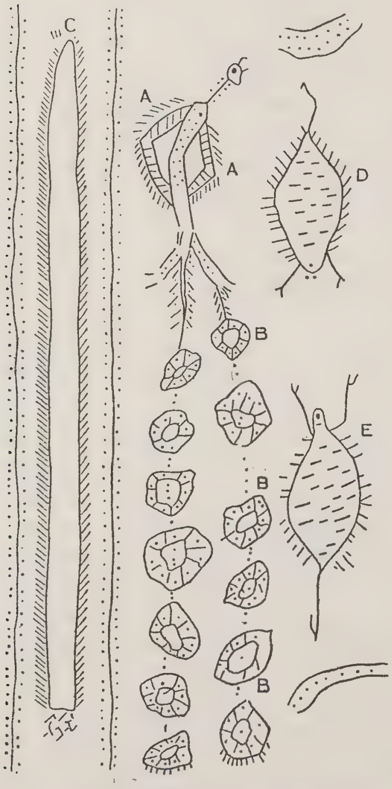
Doubt has been cast upon this method of taking the bird, but several times I have found bamboo slivers such as I have described, twice in Pahang and once in Sarawak, and I can assure the reader that it would have been almost impossible to pull them up with the bare hands without cutting the flesh to the bone, so cunningly were they twisted, the sharpened edges curving spirally and affording no point of attack free from the cutting surfaces. As far as considering this as a ruse to deceive prospective Mohammedan purchasers and eaters of the pheasants into the belief that snared birds had been bled to death in the conventional way, this seems rather far-fetched. Even before I found actual evidence I saw no reason to disbelieve the account, especially as it is a common tale both in the Malay Peninsula and in Borneo, and in many places from which Mohammedans are absent. Nooses are sometimes attached to a peg driven into the floor of the arena, and traps set in such a place are invariably sprung when once the bird gains courage to begin its attempts on the peg. The bent sapling curving above or the suspended log, are sometimes, however, so feared by the pheasant that it will not enter the clearing.

Still another count against the Mohammedan theory mentioned above is a widespread belief among the Malays of some parts of the Peninsula that both the Argus and the peacock are unclean birds, of which under no circumstances will they partake. The turkey is included also. The idea seems to be limited to those birds which erect the tail fan-wise and strut, as these Malays will eat junglefowl and firebacks without hesitation.

Many of the aborigines also believe that the Argus is immune to the poisoned darts of their blowpipes. But as they say the birds become very sick when struck, the immunity is probably due to the large size or the protective power of its great wing quills. It is said that the wild Sakais not uncommonly capture the Argus chicks and bring them up with their domestic poultry.

The Argus Pheasant enters quite prominently into the life and legends of the natives of the Malay Peninsula, especially the wilder tribes, such as the Sakai, who have not come intimately into contact with the white races.

The *Til-til-tāpā* is the bird which is believed to bring the souls to male children. Among other intricate rites, the mother must eat of this pheasant before the child is born, and thus allow the soul to enter its body while yet not perfectly formed. It is possible that the bird in this ritual may refer both to the Argus and the peacock pheasant.



Argus Charm or Tuang-tuang against Millipedes and Scorpions.(after Skeat).

Wizards and magicians of the Sakais know the Argus Pheasant as a demon, not a flesh-and-blood affair, as is their notion of the vampire, but the *kuang* is akin to the ape-demon in that it can pass through walls and trees and bushes. It is the demon of madness, and as such one to be exorcised. The wizards of these people use bamboo tubes, or *tuang-tuang*, which are struck upon the ground during the performance. These are highly ornamented with crude designs, the meaning of some of which is very plain, while others have evolved into symbolism, unrecognizable except as translated by the natives. These tubes are used as charms against various dangers and ailments, supposed or real. Some of these are scorpions and centipedes, mice and squirrels, ants, skin diseases, millipedes, when the natives are searching for fruit, the collapsing of houses, spiders, poisonous fish and drought. The Argus patterns are usually fairly realistic.

A *tuang-tuang* of interest in the present connection was a charm invoking the aid of the Argus Pheasant against millipedes and scorpions. The theory was that, as the Argus feeds upon these creatures, its help, emphasized by the crude designs and patterns, was to be summoned by striking the bamboo against the ground. The explanation of the design is that the centre is occupied by a figure of the Argus itself, with the wings and two long tail-feathers covered with the eyes or ocelli. The ornithology of the native is here at fault, as the eye-spots are really confined to the feathers of the wings. To the left of the pheasant is a long millipede, reddish yellow in the original design, with its head pointed in the opposite direction from the Argus. The dots on each side represent the traces which this creature is supposed to leave on the skin of the person attacked. To the right of the Argus are two blue scorpions, with their heads pointed toward one another. The upper is a female, the lower a male. This is indicated by the two curved designs, one above and one below these scorpions, which represent the swelling of the skin after the bite of one of these animals. The female is supposed to be much the more poisonous of the two sexes, and to produce a double row of perforations, so we see that the swelling design near her tail-sting is twice as thick as the other and with a double row of dots.

In reference to the loud, plaintive, nocturnal cry of the Argus the Malays have a saying, "Like the Argus calling in the jungle," the simile being to the half-despairing love of something or some one a great distance away.

In the Federated Malay States, although the Argus is included with other birds which are protected by a close season, this is needless as far as the sportsman with a gun is concerned. Junglefowl are often shot and figure on menus in Kuala Lumpur as game-birds, but it is almost impossible to find any one who has even caught a glimpse of an Argus. A District Officer in Pahang, with twenty years' experience in various parts of the jungle, told me that in all that time he had known of but one Argus being shot, the shooter in question being after big game and the bird flying between him and the moon, on its way to its roosting-branch. He himself, while he had heard hundreds calling, had never seen one. I had but little trouble in seeing them, especially in Borneo, where I made a dead set at studying them, using an umbrella tent or a perch in a tree for the purpose.

The birds are trapped on every possible occasion by the natives, as both their flesh and feathers are saleable, and large numbers of the latter are constantly smuggled out of the country.

CAPTIVITY

Argus Pheasants have been kept in captivity in many countries, both in public zoological gardens and in private aviaries. In both they have been bred successfully, but they must be considered as delicate birds, kept in good condition only by constant care and watchfulness. They seem more susceptible to disease, however, than to climate. Live Argus Pheasants were taken to Java as early as 1780, being brought from Malacca, and they were considered great curiosities. In our own country they do not long resist the extreme changes of temperature or other inimical factors of their life in captivity, and seldom live longer than a year or two. England seems better suited to them, and as they do not have to be housed in heated rooms in the winter, they show a much greater average viability. Of twenty-two Argus which have been in the possession of the London Zoo, the average length of life has been three and a half years, while the record age of this lot of captive birds is thirteen years and seven months. This is far exceeded by certain Argus Pheasants which have been kept by private fanciers in France. Here we read of a bird originally imported direct from the Malay Peninsula which lived over thirty years in captivity. Several of these private *faisaniers* have detailed their experience in the "Bulletin" of the Société d'Acclimatation de France, and some of this is well worthy of translation.

When the newly imported Argus Pheasants reach France they are usually bedraggled, and with many feathers missing. The customary shelter is a high enclosure, open and arched, without windows, but with an eastern exposure. These pheasants feed upon grain of all kinds, principally corn and *fèveroles*. They also are fond of husked acorns, and, in season, berries, grapes and stoned cherries. The birds moult normally from September to November, and if this is successful they pass the winter without ailment or suffering. For while Argus Pheasants are delicate in appearance, in France at least they are quite hardy, for during cold and snow, in a closed shelter, they will endure a temperature of 40° without harm. The time of moult is the season of greatest danger for the adult birds, for owing to the tremendous size of the wing- and tail-feathers there is a correspondingly enormous drain on the whole system. The bird droops and mopes all day, and ceases altogether the utterance of his loud call. If cakes and custard are at this season added to his diet they will aid materially in giving him strength successfully to endure the ordeal.

M. Delaurier relates a remarkable circumstance connected with the removal of his Argus Pheasants from Angoulême to Les Planes. He says: "Mes Argus ont été transférés aux Planes il y a trois ans, et, depuis cette époque, la mue du mâle, qui s'opérait régulièrement à Angoulême en Septembre et Octobre, ne se fait plus aux Planes qu'en Avril et Mai, d'ou non fécondation des œufs pondus par la femelle." It is difficult to account for this radical change in the time of the annual moult, and still more strange that, whatever environmental factor was the cause, it did not exert a similar physiological influence on the female. As it was, we can readily understand, as the author implies, that under the new conditions it was impossible to breed them, the period of reproduction occurring at such widely separate intervals each year in the two sexes.

The goodly age to which these birds normally attain, as attested by the long-lived Argus which have been kept in France for almost thirty years, is indicated by the slow attainment of maturity in the life of the individual. They do not acquire fully adult plumage until the third year, and are not dependable breeders until they are four or five. And it is sometimes even later that they reach their maximum in extreme length of the decorative plumes. The bird of three decades retained his full power and vigour, and the length and general size of his wing- and tail-feathers exceeded those of all others measured. The largest secondary wing-feathers were over 800 mm. in length, and the two central tail-feathers were 1,420 mm.

In February the male Argus Pheasants begin to call, occasionally during the day, but more frequently at night. March sees the first indications of courtship. To quote the inimitable phraseology of M. Dulaurier: "Au mois de mars, ses allures changèrent, il redressait les plumes pileuses de son front et de son cou, entr'ouvrait le bec, ramassait à terre n'importe quoi, et courait en cercle dans la partie libre de la volière, en frappant fortement ses pattes sur le sol."

When the female approached, he would spread the long wing-feathers, hiding his head behind them, and would erect the two great feathers of the tail; at which time all his plumage trembled and produced a noise which at first seemed to come from the throat of the bird—a throat which "ressemblait à un véritable et superbe écran vivant."

Two is the complete set of eggs in the Argus, as with the peacock pheasants or éperonniers, and this may be repeated two or three times. The eggs are deposited usually two days apart, while very rarely three days may intervene. The first one or two sets are taken away and placed under a hen, the Argus mother being permitted to brood and rear the final set. The time of incubation is twenty-four or rarely twenty-five days. The birds begin to lay about the first week in May, and if the settings are removed at once, an interval of some five weeks will elapse between the succeeding several layings.

M. Dulaurier gives an interesting detailed account of one season's experience with a pair of Argus. After several matings, the female of this pair laid her first egg on May 18th, and two days later the second. These eggs, dropped anywhere and abandoned, were entrusted to a strong Barbezieux hen, and on the 15th of April one young bird hatched, the first egg being infertile. The young Argus at birth was the size of a young chicken, well built and apparently strong, but the remainder of April was cold, and as the hen failed to warm the chick sufficiently, it was necessary to place it in an artificial brooder, and to feed it forcibly with custard. It did not survive these vicissitudes and died when fifteen days old.

The male Argus, whose advances did not cease until September, again paid court to his mate, and a second laying of two eggs occurred on the 28th of April and the 1st of May respectively. These eggs were deposited in a little hollowed-out place dug by the female Argus herself, near the feeding-place. She began to sit, and, in order to protect her from interference by the male, she was surrounded with brushwood. She sat but nine days, however, when the eggs were at once given to a domestic hen, which hatched two splendid young on May 26th, and these were raised practically as are the éperonniers.

A third laying of eggs took place on the 8th and 10th of June. It might have been possible to have obtained a fourth laying without exhausting the female, but the season was advanced. So this time the male was placed by himself in a neighbouring cage, after which the hen began sitting. "Celle-ci reprit le nid après le départ du mâle, le garda sans lever, ni pour boire ni manger ni se vider, jusqu'à la naissance de ses deux jeunes." In support of this final remarkable statement we read in another account of the breeding of the Argus that when the hen begins to sit on her nest, "ne le quitte ni pour boire, ni pour manger, ni pour se vider": and again, M. Fauque assures us: "Pendant les vingt-quatre jours qu'a duré l'incubation, la femelle ne s'est pas levée et n'a pris aucune nourriture." It is difficult to credit this statement and to see how it is possible that the bird, especially after she had laid six eggs, could have sufficient strength to enable her to go without food and drink for a space of three and a half weeks. I am inclined to think she must have taken nourishment at night or at some other time when her absence was not observed. This is no reflection on the reputation which the Argus mother holds among all who have bred this species, of being an ideal mother and the most excellent of sitting birds. She is always careful not to tread on the young chicks, and feeds them assiduously, presenting tiny bits of custard, ants' eggs, meal-worms and other small insects which are thrown to her, in her beak to the young, nor does she herself eat until they are fed. This is a very important matter—the exact method of presentation of food—for like their near relatives the éperonniers, the young birds, during the first ten or fifteen days of their life, will eat only what is presented in the mother's beak. If, as occasionally happens, their foster-mother fails in this, they must be fed by hand, the bits of custard and meal-worms being offered on the points of a pair of forceps. After three weeks all danger from this source is past.

Their own mother hovers them carefully at first, and at the end of a week or more, when they can fly, she leads them up to a perch and there shelters them with her wings. If low perches are available, the chicks can flutter upward even when less than a week old. So when the Argus mother is caring for the young birds it is necessary only to throw the food to her, and she will take entire charge of its distribution to each, and will concern herself with their entire welfare. During their rearing, however, it is necessary to remove the cock bird, as he appears "jaloux de l'affection que la mère témoigne à ses jeunes." The growing of the first plumage and the successive moult is a severe tax upon the strength of the young bird, appearing rather ill and with but little appetite, but when this crisis is past he regains strength with great rapidity. At this time, when little over a month old, the young bird will often spread its diminutive, undecorated wings and tail, and strut about before its mother and its young sister. The young cock birds are larger and brighter in colour than the hens.

When the young birds are three months old they may be separated from their parent, previous to which they should be united with their younger brethren. If there are three or four young birds, they will live happily, even in a small enclosure, feeding together in the day and sleeping at night side by side upon the same roost.

DETAILED DESCRIPTION

Adult Male.—I obtained a large series of adult males of the Bornean Argus, and the detailed description which I have given of a typical specimen need not be repeated for the present species, the differences being so slight.

On the whole, the white in the Bornean bird is replaced by buff in the Malay species, and the blacks are less strong, more brown in the latter. The orange rufous of the upper breast is a dull chestnut in the Malay Argus. On the under parts and sides in the latter, the white is wholly replaced by chestnut, and the back and rump is decidedly orange, not salmon or vinaceous buff. The Malay bird is also the larger of the two species.

Adult Female.—In the Malay bird the collar is dull chestnut, not bright rusty red, and the other parts are rufous rather than buff. The blacks in the Borneo Argus become less clear and browner in the Malay Argus. In a good series of specimens these differences characterize the majority, but there are individuals which are quite indistinguishable. I secured one female from the interior of Pahang which even excels the typical Borneo birds in their own characters.

Chick in Down.—Forehead warm rufous, becoming darker posteriorly, but remaining dark chestnut over the hind neck, mantle and anterior portion of the wing. From mantle to rump velvet black, shading into rufous on the sides under the wings. A narrow pale buff line extends down the scapular region outlining the antero-dorsal juncture of the wing. On the back these lines suddenly broaden and extend straight back to the rump, bisecting the black area into three, the mid-dorsal black line being about 10 mm. wide, and the two lateral creamy buff lines 5 mm. in width.

The face and side neck are orange rufous, this warm colour being sustained well across the breast, but paling into buffy white on the chin and very gradually into the same colour on the abdomen.

The flight feathers and longest coverts are brownish black, irregularly splotched and spotted with pale rufous. The coverts and inner secondaries have a broad sub-terminal band of rufous. The rectrices are barely discernible.

Seven primaries are growing rapidly, the 8th barely discernible as a very short sheath.

Eight well-grown secondaries are visible, while number nine is but little shorter. Weight 2·5 oz.

Iris pale brown, bill pale horny, legs and feet orange red, claws whitish. Length, 158 mm.; expanse, 280; bill from nostril 10; wing, 84; tail 17; tarsus 30; middle toe and claw, 25 mm.

EARLY HISTORY

Linnaéus in 1766 gave to this bird the name of *Phasianus argus*, and several lines of very poor description. He adds: "Habitat in Tataria Chinensi," which erroneous information is accepted and faithfully handed on by Latham, Sonnini and many other authors.

Latham in his "General Synopsis of Birds," published in 1783, under the caption of Place and Manners of the Argus Pheasant, gives us a number of facts which do duty in various ornithological works throughout the succeeding fifty years. Latham in turn had obtained this information from Marsden's "History of Sumatra."

He says it inhabits China, and that the specimens thus far received have lacked head and legs. This species is "likewise common in the woods at Sumatra, where it is called Coo-ow. It is found extremely difficult to be kept alive for any considerable time after catching it in the woods; never for more than a month. It seems to have an antipathy to the light, being quite inanimate in the open day; but when kept in a dark place, it appears perfectly at ease, and sometimes makes its note or call, from which it takes its name; and which is rather plaintive, and not harsh, like that of a peacock. The flesh resembles that of the common pheasant.

SYNONYMY

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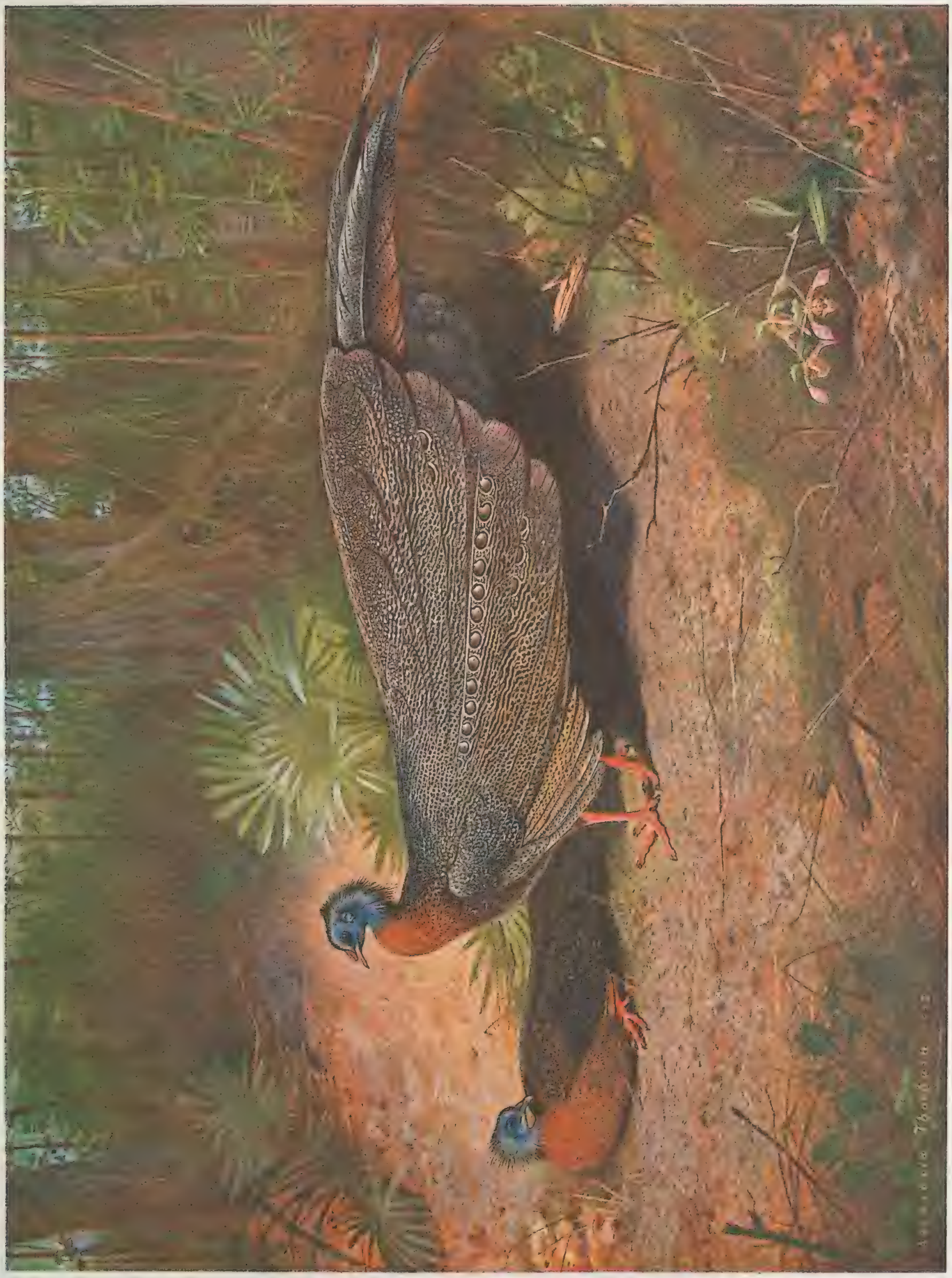
BORNEAN ARGUS PHEASANT

Argusianus grayi Elliot

The Bornean Argus has the white of the plumage clearer, and the breast is bright rusty red instead of the dull chestnut in the Malay bird. The blue face and the red legs and feet are the brightest colours on the bird, but the plumage is a wonderfully harmonious combination of buff, white, brown and grey. When the wings are full spread the radiating lines of eyes appear as if illuminated from above, and when the bird vibrates its plumage, all appear to revolve in their sockets—perhaps the most remarkable sight to be found in the world of bird life.

PLATE LXXXIV.



BORNEAN ARGUS PHEASANT.

BORNEAN ARGUS PHEASANT

Argusianus grayi (Elliot)

NAMES.—Specific: *grayi*, in honour of George Robert Gray, 1808–1872, the eminent British ornithologist, author of the "Genera of Birds," and for many years curator of birds in the British Museum. English: Bornean or Gray's Argus Pheasant. Native: Kwe (Dutch Borneo); Ruai moo-bough, adult male, ruai lal-lung, immature male (Sarawak).

TYPE.—Locality: Borneo. Describer: D. G. Elliot. Place of Description: Ibis, 1865, p. 423. Location of Type: British Museum.

BRIEF DESCRIPTION.—Male: Similar to the Malayan Argus, but with the buff of the mantle and wing-coverts replaced with pure white; the neck and upper breast is bright rusty red with yellowish shaft-stripes, instead of dull chestnut; there is also much more white in the under plumage. Female; The neck is bright rusty red instead of chestnut; the under parts are marked with sandy-brown, with much less rufous.

RANGE.—Interior of Borneo.

THE BIRD IN ITS HAUNTS

THE first glimpse I had of an adult male Argus Pheasant was the only time I ever saw the bird away from its dancing-place. I had tramped all day through the jungle and had located what I thought was an old arena on a hillock, only fifty yards from the bank of the Mujong River. In late afternoon I swam in the river, and then, alone in my little native craft, drifted down stream toward the great war canoe which was my present home. When within a few bends of it, I drew myself by the overhanging branches close to one bank and watched the day die over the brown Bornean stream.

The sun was hidden in a blaze of yellow and gold clouds before it sank, so this gave a long twilight, an unusual thing in the tropics. Then an afterglow tinted the eastern clouds violet and pale wine colour. The two banks of the river became darker, duskier green, and finally all but the sky-mirrored outermost leaves changed to black. The sky was pale blue; the muddy water a nameless, beautiful brown. The banks had been lifeless much of the day, the jungle folk keeping to the inner forests. Now, however, in the cool of early evening, birds' voices were heard. Small flocks of fruit pigeons dashed over the trees. Large mynas perched on the few isolated tall trees, and now and then great doves with white breasts swung swiftly across the river. In a black concavity of the pale clayey bank a lighter spot appeared, framed by bushes. My glasses showed a wild boar, fore-feet stamping, tushes gnashing and twisted tail flicking. Had he not been against the blackest shadow he would have been invisible, as he was coated with the mud of the banks. The flies gave him no peace, and he soon turned and climbed awkwardly up into the dark jungle behind. Now a flying fox appeared, flapping and soaring by turns like a pelican, and then a score of these giant bats came in sight, high in air, all headed for some favourite fruit tree.

As the mynas flew from their tree to some distant roost, the bats swung up to the fruit and enveloped it like feeding starfish, swinging around head downward and eating away with all their might.

They take the place, in flight, of the herons which are absent as far as my observation went. A brace of bluish ducks—apparently larger than teal—flew ahead of me, and a few distant shrills announced the evening concert of the great five o'clock cicadas.

Then came, unannounced, the sight of sights. A few paces to the right of the wild boar's wallow my eye caught a movement against the water-washed bare face of clay. Fortunately I was looking along the tops of the barrels of my stereos, a habit of mine when locating anything by eyesight the finding of which requires instant but inconspicuous adjustment of the glasses. I pushed them up before my eyes, and there sprang into clear-cut delineation what my eyes had refused to separate from the shadows of the bank. A male Argus was drinking from a rain-pool—so it proved when I later investigated—a yard or more from the roiled current of the river. It was half crouched, and the motion of the head, alternately raised and lowered, was all that betrayed the bird. The long wings, the gracefully twisted tail-feathers, were as motionless as if carved in cameo against the earthen bank. I watched it thus for a minute, two minutes, then my attention wandered momentarily to something near at hand, and when I looked back the bird was just disappearing. At least I had seen a wild Argus, and brief though the glimpse had been, I felt a great superiority to my fellow white men the world over, who had *not* seen an Argus Pheasant in its native home.

Then in the dusk there passed on the stream a little model boat floating uncertainly along, carefully carven, with many little figures standing bravely up, looking woodenly toward their fate in the distant sea. This was the work of native Dyaks, who prepare them with the greatest care when a family is attacked with illness, and set them free, hoping the bad spirit will accompany these "doubles" of the afflicted. These little spirit craft have been washed ashore as far away as Singapore.

The stars burned out brightly, and the wet mists of night settled down before I followed the little Dyak boat and drifted round the last bend into sight of my canoe. On the beach were my dozen native paddlers, and their fire lit up the circle of their great bronze bodies—a wild sight in this wild country. The light also was reflected from the long, low, thatched canoe shelter which beckoned me to slumber.

GENERAL DISTRIBUTION

The Bornean Argus does not seem to occur near the coast, nor in any low, swampy regions, but it is generally distributed in the interior, especially in rolling, hilly or mountainous regions, and always, of course, in the deepest jungles, never in open or sparsely forested country. In Dutch Borneo we have many records, such as Mounts Kenepai and Liang Koeboeng, and on the upper Mahakam at Dingai and on the Brunuei, Blu-u and Tepai Rivers; on the Padas River, in British North Borneo, at Bintulu, on the Mengalong River, Mount Dulit, where it ranges up to two thousand feet and probably higher, and Silam, while I have found it generally ranging over central Sarawak close up to the Dutch border.

GENERAL ACCOUNT

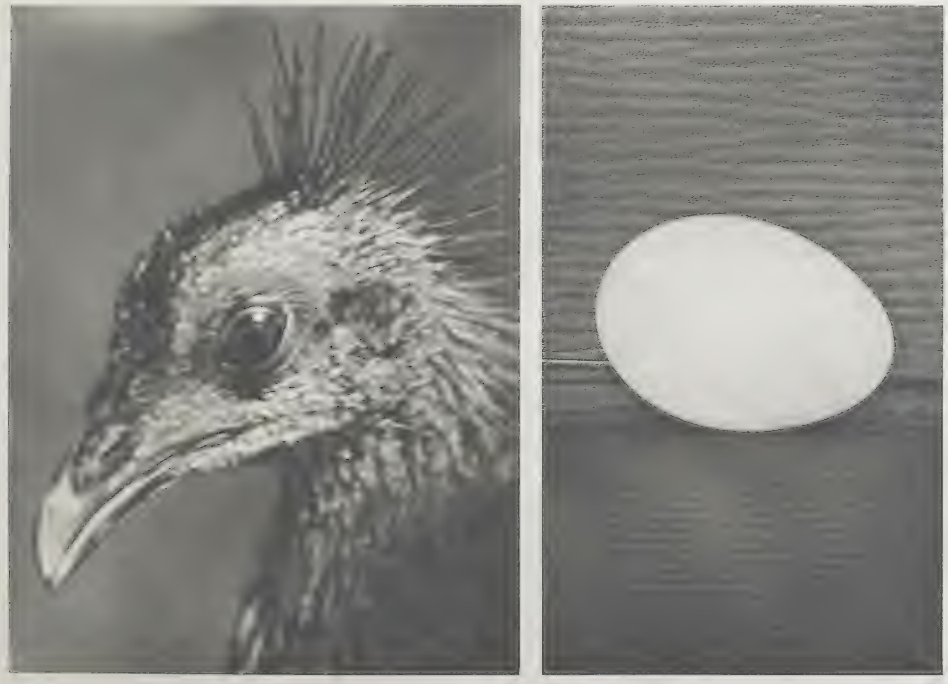
At Kapit, the last fort of Rajah Brooke on the Rejang River, I first received news of the Argus Pheasant, and a few miles farther upstream, where I started the natives

BORNEO JUNGLE NEAR DANCING-PLACE OF ARGUS PHEASANT

HEAD AND EGG OF BORNEAN ARGUS PHEASANT

The dense Bornean jungle consists of tall, high-branching trees with thick undergrowth beneath. Unless an opening is made by a wind break, or a glade cut by natives for planting, the jungle is unbroken, and there is no way of locating these pheasants except by the direction of their voices.

The males are given an alert appearance by the upright, stiffened crest arising from the top of the head. While they take such risks to summon their mates and to display before them, the hens later go off by themselves, choose a nesting site, and lay and brood their two white eggs in solitude.



BORNEO JUNGLE NEAR DANCING PLACE OF ARGUS PHEASANT.

HEAD AND EGG OF BORNEAN ARGUS PHEASANT

trapping, I secured my first specimens. At this point on the Rejang, Dyak communal houses were built every few miles along the bank and much of the intervening country was of second growth, hinting of former native occupation and clearings. Here the general percentage of pheasants was: firebacks 88 per cent., whitetails 6 per cent., Argus 6 per cent. Seventy miles farther inland, in the more hilly or mountainous region along the Mujong, where the jungle was almost unbroken and Dyak villages very few in number and long distances apart, the percentages were appreciably altered: firebacks 20 per cent., whitetails 15 per cent., and Argus 65 per cent. The first is not so radically disturbed by the presence of man, and indeed these relatives of *Gennaeus* will even feed on the paddy of the Dyaks. The whitetails are much more intolerant of mankind, and retreat as the savages advance, while the Argus, keenest sensed of all, will have none of the interlopers, and is to be found only in undisturbed forest.

The limited home range of each adult male is well shown by the continued effects of trapping in any one locality. At one stop on the Mujong River I had all the hunters in a small village of Dyaks out trapping on the east side of the river. They ranged through the jungle for a radius of about four or five miles, and in a few days brought in five adult birds. Another was caught some time later, but no more. Several females and two young males were then snared, and after that not an Argus was to be obtained in this one district. The birds wander very little from their dancing-places, and it is probable that for a long time after our visit no adult males would push in from the neighbouring jungle, the arenas being gradually taken up by young males, and the females coming slowly in response to the calls of these birds.

Away from the rivers and the vicinity of natives, there was seldom a night when one could not hear Argus calling. As a rule they seem to live a considerable distance apart, but once I found four dancing-places, three of which were occupied, within a circle the diameter of which was not more than one mile. I think that in no instance was more than one bird snared in the same place, and never were two caught in adjoining traps; a rather clear commentary on the unsocial character of these birds. A flock of Argus would be an anomaly indeed, and a pair is a rarely witnessed association. What I have written concerning the voice of the Malayan bird applies equally to this species. The Dyaks usually give the note as *mow-a*, that being the nearest to their peculiar enunciation of sounds. More than once I have known an Argus to call loudly once or twice even at midday, on hearing the report of a gun, and occasionally during the nightly downpour, *keouw* would ring out after a loud clap of thunder.

When watching an Argus climbing up to its roost one night, from my roost in an adjoining tree, my eye caught a dark mass just above the pheasant. I could not make out whether it was a bird or beast, or merely a dense tangle of leaves. When the Argus took a leap to the next rung in its arboreal ladder, the dark mass suddenly took to itself wings and flew with a swish of pinions and a shrill cry, proving to be one of the smaller hawks which has a strength of voice out of all proportion to its size. It must have been concealed by the tree trunk from the pheasant, for the sudden outburst seemed to take the Argus completely by surprise, and with a backward leap, forcing its tail-feathers into a sharp bend as it turned, it also flew. I was surprised to see that it hardly lost any altitude, beating vigorously and evenly through the glade. As far as I could follow it, it constantly gained speed and was still well above the ground. Such flight could hardly have been sustained for long, however, for the secondaries of the Argus are more of a hindrance than a help. On the other hand, the weight of its great extent of plumage is very little, the entire bird never weighing over four pounds.

The sight of a much more interesting method of escape was vouchsafed me one day when I was in my umbrella tent, hoping for some whitetailed pheasants to pass along the little trail which they frequented in coming to water. From one direction appeared a female Argus, which must have seen my tent during the few days it had been erected, for it now showed no surprise at sight of it. From a great buttressed tree near by a shower of leaves and twigs had announced the presence of a family of gibbons, and through my ventilation hole in the top of the tent I could dimly see the shaking branches. The Argus walked slowly along, pausing only once to feed, when a family quarrel or other cause wrought the monkeys up to a pitch of great excitement. There was a frantic chase and two big fellows came in wild pursuit, one after the other, hand over hand down the lianas almost to the ground. This occurred close over the pheasant, and at the very beginning of the outburst the bird crouched perfectly flat. It was surprising to see how she obliterated herself. A fern or two was bent over her body and broke up the symmetry of the curved back, while her head was flattened among the moss, and her general plumage harmonized well with the reddish-brown dead leaves and the parti-coloured caladiums which grew thickly hereabouts. The two apes passed close to her and swung up again, never ceasing their wonderful progression until they were out of sight. The Argus rose, fluffed up her feathers, shook herself and walked on, stopping twice to reach under one wing and arrange a disturbed feather. I was delighted to have had such a close view of the bird and yet not to have alarmed her. She had plenty of time to escape the monkeys by running, and the fact that she chose the method of effacement rather than flight proved that there was unquestionably real protective power in her garb; the only kind of proof which counts, that of resignation of the bird's body to a passive attempt at escape by concealment.

DAILY ROUND OF LIFE

The food of birds is a subject which has been almost wholly neglected. Save where it affects man's pocket-book directly through his grain and vegetables and fruit, we know little or nothing in the case of whole groups of birds of the items of diet, items which in many cases would throw light upon correlated phases of their life history. I give a list of the crop contents of ten of the Argus which I secured, taken in widely separated places, and which I think adequately represents the usual diet of these birds.

Males: 1. Eight large black ants.
2. Twenty ants of medium size; several dozen very small wire worms.
3. Fifty-six ants of medium size and other insects; many small seeds, two large ones.
4. Thirty-odd medium brown ants; sixteen seeds of several species.
5. Twenty-eight ants and many small fruits.
6. Six or eight varieties of small nuts and seeds.
Females: 7. Eighteen ants; four seeds; leaves and soft stems.
8. Six big black ants; eleven medium black ants; one giant solitary ant; four kinds of seeds; comminuted leaves and petals.
9. Several dozen ants; a black and white wire worm; numerous seeds.
10. Several black ants; many seeds, nuts and tubers.

The dominance of ants in the food, all but one of the birds having fed upon them, is interesting, and some of these insects had extremely poisonous stings, the fire-ants being well represented. The recognizable species among those taken from the crops of the Argus proved to be *Polyrhachis bihamata* Drury, *Bothroponera tridentata* Forel, *Diacamma intricatum* F. Smith and *Odontoponera transversa* F. Smith, while the giant ant, the kind which is so common in the tropics wandering solitarily up and down the trunks of trees, is *Camponotus gigas* Fab., var. *borneensis* Forel. But the most noticeable feature is the total absence of termites, or white ants as they are usually but wrongly called. These insects are the main item of animal diet of tropical pheasants, and for the Argus to be the only exception, and to choose the hard-bodied, true ants, armed with offensive stings and formic acid, is unaccountable. Owing to our ignorance of the nuts and seeds of tropical trees I have been unable to identify a single fruit upon which the Argus feeds, although some are most characteristic, bizarre in shape and peculiar in texture of husk. From the character of the food we know that this pheasant is altogether a ground feeder, that most of its vegetable food is picked up from where it has fallen and its animal food is found on the ground, or, as in the case of the wire worms, is scratched out of decayed logs.

In connection with the food of Argus Pheasants there is a point of unusual interest, which very possibly may have a more important bearing than we know upon its life as a whole. This is the fact that its flesh is undoubtedly poisonous and unfit for food, at certain places or at times of the year when, apparently, it has been feeding upon some fruit or seeds which lends this noxious quality to its flesh. I partook of Argus Pheasants—in fact for one week when no other flesh was available I became heartily tired of them—but I experienced no ill effects whatever. But I heard direct from several reliable sources of toxic poisoning in the case of both Englishmen and natives, and more than one explorer has given a detailed account of similar experiences. The Dyaks are familiar with this fact, and told me that they know the very fruit in question. They say that other ground birds, porcupines and other rodents become likewise infected. In one case four natives and a European all became violently ill after eating an Argus, the sickness lasting four days or more. The thought comes, though merely as a suggestion, that the ability to devour such fruit on the part of the Argus might be a factor in preventing certain enemies from attacking it. Certainly if the internal economy of a civet cat is at all like that of a human being, one such experience would cure the animal of ever killing another Argus. The intricacies of the inter-relationships of wild creatures are so complex that such a thing is not so impossible as it seems, but if so, it must remain for some future observer, with even better opportunities than I had, to clothe this suggestion with the first support of evidence.

Much of our knowledge of the more intimate details of the wild life of the Argus Pheasant has heretofore been based on circumstantial evidence. We know that it makes a dancing-place, summons the female and there displays before her, but of the details we have had no direct account. I hoped to see something of this wonderful phase of the bird's life, and was successful in so doing, though it took all the woodcraft I possessed, and taught me such mortification of the flesh that, like a Sadhu, I feel certain I have acquired much merit. I knew beforehand that I had a worthy antagonist, and I had made several elaborate plans to enable me to outwit the wary bird. Two of these I put into execution, and both served my purpose excellently. As I look back on my experiences my only regret is that I did not spend another month in pursuing exactly the same method of investigation, and clear up the points which must now be left to the future.

Throughout this monograph I have avoided, as much as possible, detailed reference to the personalities of the expedition which I made in search of the pheasants, feeling that this was in no sense a travelogue, and that the pheasants were the important thing, and their hunter and his adventures of no direct concern. But the general conditions under which I worked in the Argus country seem of sufficient interest to touch upon.

With twelve Dyak paddlers, a Malay guide and cook and a Eurasian taxidermist my tale of servants is complete, and we all lived on a Dyak war canoe, seventy feet over all with only four-foot beam, protected by a low, thatched shelter. This was moored close to the bank, and from this I made my excursions into the jungle.

For a number of reasons it was at first difficult to sleep at night. Often it pours from dusk to dawn, with frequent terrific thunderstorms about midnight. Then there is always a more or less constant chorus of grunts, groans and snores from the men, and every now and then the boat tips as a Dyak rolls off into the water to ease a tie-rope or shunt off some threatening piece of drift. At daybreak, if a village is not far away, several canoefuls of Dyaks, men and women, pass and shout at us, on their way hunting or to look after their small jungle paddy-fields.

Until I look out I have no idea of the location of our boat. If the rains of the preceding night have been local and have already flooded the river, we are floating high up among the branches of the trees, and can push close in to the bank and step ashore. But if the water be low we shall be lying ten to twenty feet lower, out at the end of the ingenious causeway of notched poles which my men have erected over the mud banks. The sun comes over the trees about seven o'clock, and, if the day is to be a fair one, a dense mist overhangs the river. Fish leap here and there; great trees come hurtling past, branches scraping our sides, uprooted by some tropical downpour far up-river. For an hour or two in early morning black flies are rather bad, then they vanish, to reappear for an hour at sundown. The prevailing bird notes in early morning are the loud, liquid warbles of the white-faced bulbuls and the shrill, chattering cry of wood shrikes. At each day's end comes the wonderful tropical afterglow, the east becoming rose as by a reflection from some great forest fire, the west a marvel of purples and yellows, staining the river with rainbow tints and emphasizing the intense green of the jungle's edge. After dark one has to walk gingerly on account of the fire-ants which gather about our refuse. From the canoe I take a moonlight plunge, and then lie and listen to the distant tom-toms or the nearer chorus of frogs. The voice of an Argus comes faintly, and I thrill with the thought that I am able to slough off enough of my veneer of civilization to free my senses, and make them sufficiently keen to match against the marvellous eyes and ears of this king of pheasants. This, in a word, is a hint of the background of the picture. The foreground is filled with the heart-breaking jungle work of tramping, creeping or waiting; eyes and ears tuned to highest pitch, racking to body, but when successful, giving a peace and joy which the man of cities and conventional business can never experience.

When the regularly recurring crepuscular call of the Argus told me that I was near their haunts, I made camp and began my crusade. The first thing was to locate the dancing-grounds of as many as possible. Disappointment followed many heart-breaking trips. Day after day I tramped up- and down-hill, stumbling along through moss and mould which had apparently not been disturbed since the creation, or cutting my way through a plexus of cruel rotan thorn palms, living mazes of interlaced vegetable skeins, studded with recurved fish-hooks innumerable.

I soon found, as I had expected, that an umbrella tent was useless when erected near a dancing-ground. If I could have remained for a month, and allowed the cloth to become weathered by rain and sun and to become veritably like a mossy growth of the jungle, I could doubtless have crept into it and caught the bird off guard. This was not feasible, so I made one half-hearted attempt and gave it up. My other two plans differed as widely as possible from one another; in brief, one was to conceal myself well above the ground and the other underground! and both proved to be well worth the trouble it took to put them into execution, and I am looking forward to still greater success in the future. When I found a dancing-ground which was being used I made three or four rough bundles of branches and fronds, wrapped them up in cloth and perched them from eight to twenty feet above the ground in surrounding trees. I chose spots on large horizontal branches, close to the trunks. There I left them for two or three days, then by scattering leaves about the dancing-place I tested whether the Argus was still there.

After two disappointments I found all the leaves cleared away from one chosen arena, and knew that the bird had returned and, as I suspected, was the author of the calling which had come from that direction the evening before. That afternoon I went to the dancing-ground with two Dyaks, going noisily, or at least with no effort to conceal our approach. As rapidly as possible, I changed places with one of my arboreal bundles, wrapping myself up and crouching close to the trunk. I took the precaution to run out two guy lines so I should not have to bother about balancing. I assumed the position which long experience in my umbrella tent had taught me could be maintained for the greatest period of time with the least amount of physical discomfort. Then, according to directions, the Dyaks left, making their way obtrusively, in the opposite direction of our approach. My theory was that on our arrival the Argus would at once run off, but perhaps remain within earshot. Its keen ears having detected the approach of some unknown disturbers of the jungle, the bird would afterward note their passage on and away from the arena. If it should then return I trusted to its acceptance of the slightly changed aspect of one of the green bunches of vegetation, the innocuousness of which had been proved by forty-eight hours of vegetable-like quiescence.

The sudden success of my plan fairly startled me, for my men had not been gone fifteen minutes when, through a peep-hole, I detected an Argus Pheasant approaching. A second glance showed the short wing and tail-feathers of a female. It approached with every sense alert, looking not once up to where I and my fellow-bundles were perched, but all around through the jungle and especially behind. A male Argus now appeared, and in my excitement I could hardly keep quiet. It seemed as if my pulse must set the whole tree to shaking, and I would not have been surprised to see all the leaves quivering like aspens. I longed to draw out these moments and to fix them so that I could share them with all who sympathize with such a tremendous moment of one's life: watching minute by minute what no white man had ever seen—a pair of Argus Pheasants in their wild home.

Thus I soliloquized—subconsciously and instantaneously—never taking my eye off the birds. In general I was right, but as to the details of my achievement I was wrong, decidedly so. To my astonishment, instead of beginning to show off, as I hoped would happen, the full-plumaged Argus rushed headlong at the other bird, which pluckily stood waiting the assault. I thought for a moment I was about to see a family quarrel, but an instant later I realized my mistake, and knew that I was witnessing a masculine battle. The first bird was an immature male, not a female. For fully three minutes I could have protruded my head from my cover, and perhaps have applauded, without fear of detection, so engrossed were the combatants in their struggle. Never again shall I doubt the pugnacity of this species. The birds went at one another in dead earnest, and feathers flew to right and left. At first the younger pheasant seemed to have somewhat the best of it, to be more active, less hampered by the fern growth. Then he dashed to one side into the clear arena, and this move was his undoing, for here the long wing and tail-feathers of the elder found nothing to obstruct them and his greater weight and strength told at once.

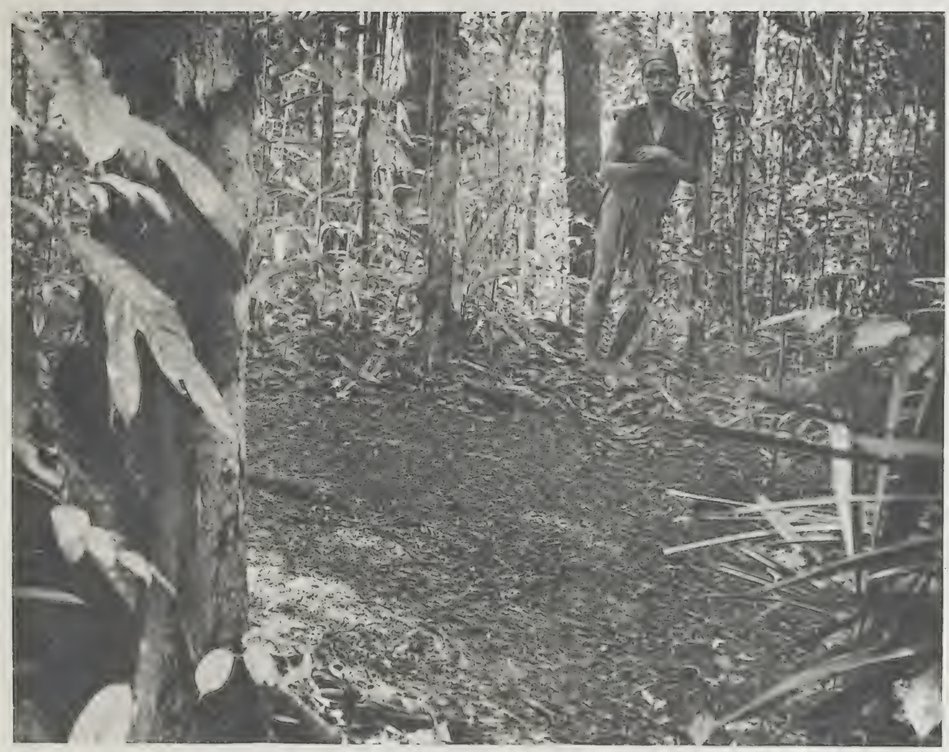
These pheasants are wholly without spurs, and if I had ever imagined such an encounter I would have pictured a pecking duel. But there was as much leaping into the air and striking with the legs as if the spurs of a fireback or a peacock were available. Several times when a strike was made it seemed to be the toes and claws which did damage, beating the bird down and giving a momentary chance to peck—and these pecks were backed with the full weight of the pheasant. Not only were they direct blows, but whenever possible the bare skin of the head or neck was seized, and then the Argus held on with bull-dog tenacity, wrenching and twisting viciously. I could appreciate the power of the neck muscles, which enabled the bird to uproot strong plants and clear its dancing-ground, when I witnessed the vigour of this attack. I saw blood flow freely more than once, and finally, without any sign of preliminary weakening, the younger bird turned and fled, the victor at his heels, pecking at his tail as being the only part within reach.

Not until both birds had disappeared did I realize that there had been other excited onlookers of the struggle besides myself, although my mind unthinkingly observed them all along. Two gaudy broadbills had fluttered and hopped about close over the combatants, seeming with their hoarse calls to be urging the opponents to greater efforts, while once a white-faced bulbul swooped down in great excitement close to the pheasants, and then retired to a branch extending over the clearing, where he sang continuously, his sweet notes seeming strangely out of tune with the emotion which inspired them. Thus passed one of the most exciting half-hours I have ever spent. When the birds vanished, I crept out at once, left my covering, descended and made my way as quickly as possible along my back trail and to camp. As I figured it out, the young bird had probably been in the vicinity before we came, and its lack of caution, returning so soon after the men had gone, together with the total disregard of possible danger on the part of the old male, was explained by the fervour of their hatred of one another, a rivalry which brooked no delay in settlement.

So we learn that not only does the voice of the Argus summon a mate, but it shows

DANCING ARENA AND ESCAPE TRAIL OF BORNEAN ARGUS PHEASANT

The male Argus Pheasant chooses a spot usually on a hill-top, clears it of all vegetation, and uses it as a display arena. The first attempts of young birds sometimes result in failure, as when they have the area all cleared except for some stout growth or root which defies all attempts at removal. Such a condition seems invariably to result in desertion for a more satisfactory site. One of the most important features is the escape trail, a low tunnel through the densest side of the glade, through which the bird can flee at once on the approach of danger.



DANCING ARENA AND ESCAPE TRAIL OF BORNEAN ARGUS PHEASANT.

aspiring young males where they may find a vent for their fighting instincts. It seems improbable that a male of such immaturity as this one could ever overcome an adult in full vigour, but it shows that the adult birds have to defend the rights to their particular arena against wandering males of all ages. Not only this, but it is very probable that each adult male has a preserve of greater or less extent, a sanctuary which he considers inviolable and which he keeps free of intruders. For I found more than one arena, freshly begun, with the beginning of a clearing, and in one of these I found signs of a struggle, and afterwards there was no further signs of preparation. It seems probable that a young or at least a newly arrived male had begun an arena within the prohibited distance of an occupied one, and the owner had driven him away. The nearest arena in this case was barely fifty yards off, much closer than I have ever known occupied dancing-places to be.

In this instance the young pheasant had worked three days before it was driven away, and I was greatly interested to be able to study the method of clearing. The first time I noticed it, I saw that most of the leaves and ferns in an area of several square yards were dead or dying. A close examination revealed the fact that a great many had already been picked off and carried to the periphery, showing that there had been some sort of definite idea as to the general size. The glade was free of trees and throughout its extent there was only one growth of serious size. This was a woody sapling an inch through, and the choosing of this glade, with such an obstruction, at first seemed to me to indicate that the labourer was young or inexperienced. It appeared impossible that a pheasant could dispose of such a sapling. I found a clue to the possible treatment in such a case in two arenas many miles up-river from this region. Here there were stubs of saplings. One had fallen and was still lying partly in the cleared zone, the other had been broken off and carried bodily to the edge. I carefully examined the method of attack and found that long before the bark had been pecked away as high as the bird could reach. This must have resulted in the death of the young tree, and its subsequent destruction would have quickly ensued. Any dead branch or tree has but short shrift in the jungle. Insects attack it at once and quickly reduce it to its original inorganic elements. This seemed to have been the case with the sapling which had broken off and had been carried from the clearing. It was riddled with worm-holes and was fairly rotten. But the other was much fresher, and though fallen, its fall was probably the direct result of the indefatigable labour of the bird. For the tissues at the breaking point were frayed and teased out, and this persistent shredding, this beaver-like working at one spot, had at last cut through the stem. When the main stem falls, and is disposed of, the stub is destroyed bit by bit until it is level with the ground. The thought of a bird felling a tree seems the figment of a disordered brain, and yet these one-inch saplings were, in comparison with the size of the Argus, growths of no mean size.

I have said that on the first day many leaves were found plucked and piled around the outer rim of the proposed clearing. The moss seemed also to be pecked or scratched up and many of the fern fronds were broken and hanging loosely. Near one side were two feathers of the bird, revealing the identity of the worker. On the second afternoon, while I could see that more work had been done, yet the change was general and slight, but some time during the succeeding twenty-four hours the bird must have laboured diligently. The ground looked as if it had been raked and most of the dead leaves and moss had been cleared away. Many of the broken fronds had been torn off and carried some distance beyond the jungle edge, and scores of small tree sprouts had been stripped of leaves and in some cases of bark, and stood stiff and graceless in the disturbed mould, awaiting further attack. In this uprooting process the bird must spend a great deal of time and strength, for I discovered, by testing, that some of these season's sprouts had taken a very firm roothold. The following day I found the tell-tale body feathers which seemed to indicate that the bird had been driven away, and thereafter there were no more evidences of occupation. A careful survey of the surroundings at this time showed that the roosting-place, for several days at least, had been on a horizontal branch of a species of wild fig tree, about ten feet from the ground and only a few yards from the edge of the prospective arena.

Another late afternoon I was vouchsafed a bit of intimacy from the lives of these birds. But while I narrate these episodes one after the other, it must not be thought that the opportunities came as easily. To make my few successful experiences fully appreciated I should write, in as vivid language as possible, accounts of my far more numerous disappointments and failures. When two or three hours of cramped, painful waiting resulted in nothing; when an Argus came into view and, just as it seemed about to do something unusual, a bit of loose bark slipped under my foot and the whole day and the ruse of tree bundles were wasted; when I think of the day when everything had been guarded against, and my subterranean plan seemed about to prove a splendid success, and a miserable tupaia or tree-shrew discovered me looking out of my conning tower and shrieked his knowledge to the world, frightening every living thing within earshot and making my hollow the centre of all eyes of the small jungle folk! These are the things which make this sort of hunting worth while; when it is not a question of the hopelessly unfair balance of dull senses behind powder and shot, pitted against keen senses, wise only in jungle lore. Here the advantage is with the wilderness folk every time, and success means the hardest kind of work, mental and physical.

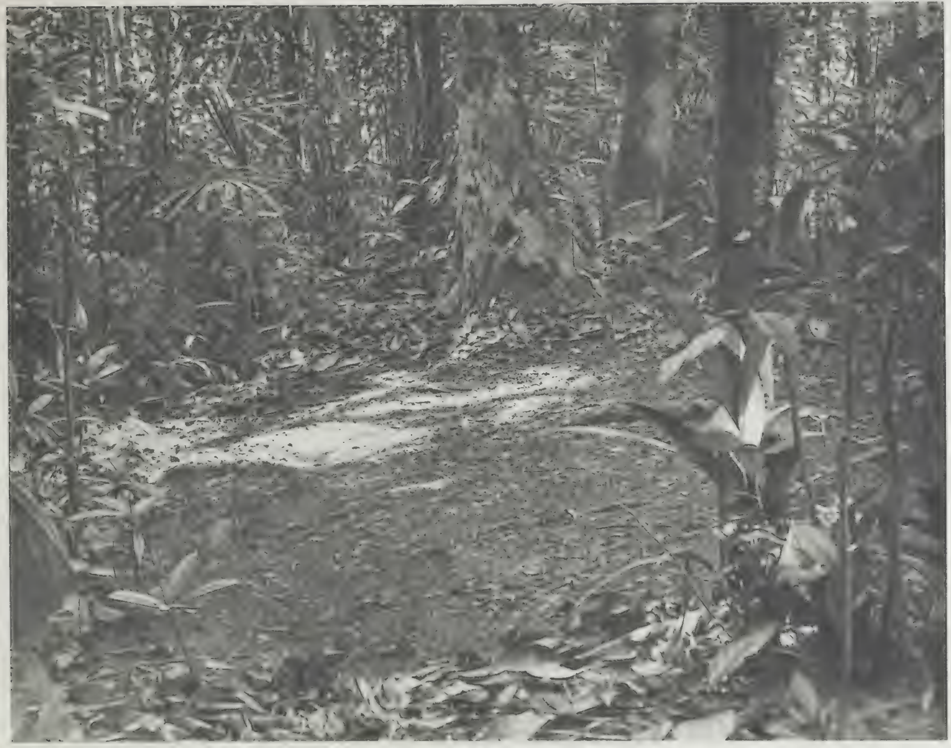
A week or two later I located a very promising dancing arena. As usual, it was on the very top of a low hill, but the escape trail, of which I shall have more to say later, lay toward the south, while in the opposite direction the ground held level for a few yards, and close by there grew a great jungle tree with a lacery of rootlets fringing a graceful, outjutting buttress. I made up my mind quickly, and in a half-hour, with the help of a Dyak boy, I had my hiding-place made. We excavated the earth from behind the buttress until I could kneel or sit at ease, and then formed a roof almost level with the ground of an old camera cloth, the centre braced upward into a little conning tower, pierced with many loopholes, and the whole covered with brush. The Dyak boy dug with the greatest rapidity, for all the world like a dog. With his hands he scraped up the mould and with knees and feet kicked it behind him. Nature has been kind to me physically and given a figure which will permit wriggling into a small aperture like a seal going down its breathing-hole in the ice. So it was a matter of a minute to slide down into the cool, earthy-odoured hollow and cover my tracks with a branch or two.

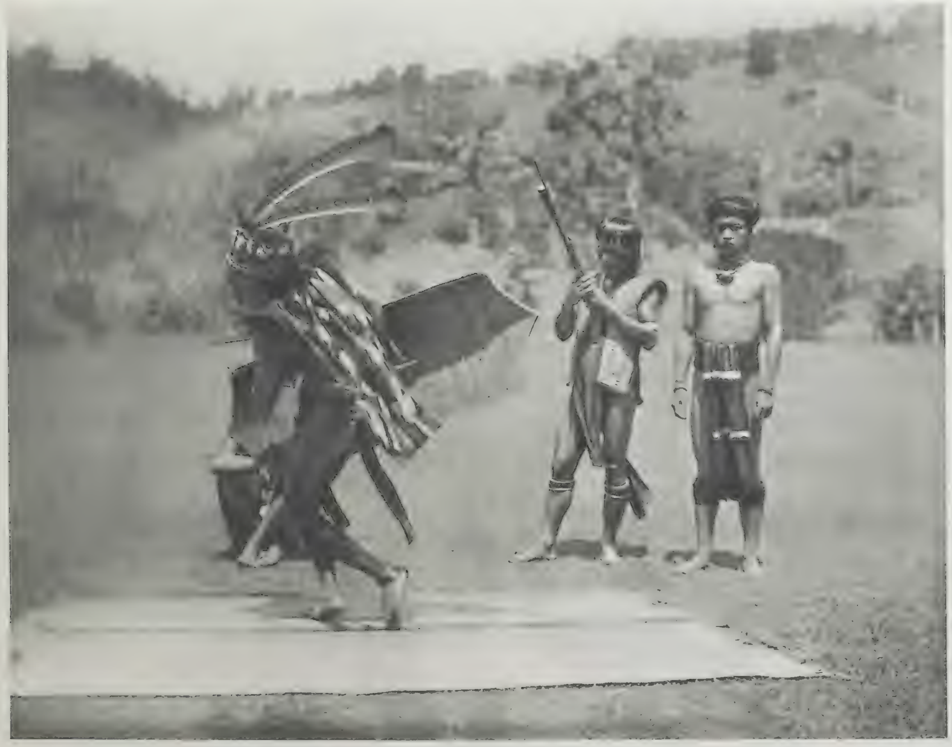
This ant's-eye view gave me many interesting sights of jungle life, and I never realized before how much more exciting the doings of the little creatures of the forest

DANCING ARENA, AND ARGUS FEATHERS IN HEAD-DRESS OF DYAK DANCER

When the display arena is completed it is roughly circular, and about three yards in diameter. The male takes up its position in the centre and calls until a hen Argus responds and approaches. He then ceases calling, and the courtship display begins.

The native Dyaks trap the Argus Pheasant in large numbers, both for food and to use the feathers for decoration. The large wing-plumes are sewed into feather mantles, head-dresses and war totems. The Dyak name for the Argus is *ruai*.





DANCING ARENA, AND ARGUS FEATHERS IN HEAD-DRESS OF DYAK DANCER

floor became when viewed from their own stratum of life. One's real proportions became indefinite, forgotten; the grasses became great bamboos, the ferns like huge hairy plants of carboniferous days, while trees vanished utterly and became nameless; they were too mighty to be considered. Tragedies and comedies were performed close to my eyes. Murder, rapine and courtship went on within reach of my hand.

But I watched all this with only secondary interest. The clear space before me was the real lodestone, its actor was the object of my whole desire at present. And finally he came. My observations here were reinforced by several repeated visits, at different times of the day and night, and the approach of my men and myself, and the apparent subsequent departure of all of us, were soon accepted by the Argus as a normal daily routine, and had I been able to stay for another week I believe the bird would scarcely have been absent for more than a few minutes after they left. At the end of a certain time, agreed upon beforehand, they would wait for my signal to return, the clear whistle of a wood quail, and I would slip out and leave with them without attracting the bird's attention to my hiding-place.

On the day in question I saw my pheasant utter its call. In the late afternoon it came quietly to the clearing from the opposite side after I had waited half an hour, and for five minutes more it stood at the mouth of its escape trail, hardly moving, with all its attention apparently concentrated upon its sense of hearing. I was sure my heart-beats must be communicated to the earth, so still did I try to be, and I gave almost a gasp of relief when the ordeal was over. I had won; the bird failed to detect anything and accepted conditions as normal.

The escape trail which I have mentioned is an opening at one side of the dancing-place, which, like the leafy or grassy tunnels in turf of little ground rodents, extends through the densest undergrowth in the vicinity of the arena. The Dyaks call it *jeli ruoi*, the path of the Argus. Unless an enemy actually approaches by way of this trail, the bird invariably makes its escape by it. I have followed such a trail for thirty feet before it was lost, debouching into the general trackless maze of the forest. Throughout this length the footprints of the bird are distinct, and the constant use is attested by the trodden-down moss and underfoot growth of the trail attached to any constantly occupied dancing-place. I have never, out of six or eight carefully examined, detected any signs of intentional clearing, or removal of interfering twigs or leaves. The bird simply chooses the safest side of the arena for a hasty exit, and holds constantly to it, and soon the constant patting of its feet mats down the debris, and the pressure of its body and plumage bends aside the ferns and begonias, and shapes the trail.

My Argus walked slowly into the arena at five o'clock on this particular afternoon and shook itself thoroughly, fluffing up its body plumage until it seemed twice normal size, then half raising its wings and tail and shaking itself until it fairly staggered on its feet. It then turned and faced the escape trail, whether by intention or not I do not know. Raising its head and neck it gave forth the call—the summons of the loneliest, most solitary pheasant in the world to its equally solitary kind. *Ke-waaau* rang out, the last syllable drawn out as the bird lifted itself on tiptoe, putting every effort into the note. The tail drooped low against the earth, even the wings trailed the ground, the whole bird relaxed as it forced its very soul into the penetrating cry. In the silence of the Bornean jungle, and to my over-wrought nerves, the cry seemed filled with emotion.

It vocalized all the wildness, it voiced all the haunting tragedies of this great island, and it threw over me a spell of evil in the days to come which ever after recurred again and again whenever I heard this cry. Six times the Argus called in all, listening for three or four minutes after each time, walking slowly about, sometimes taking only a few steps, or again making the entire round of the arena before calling.

All its motions were slow and leisurely, except once. In the course of its walk it came to a rather large leaf which had eddied down from a tree overhead. This it picked up, dropped, picked up again and carried, with an awkward waddling trot, to the edge of the clearing, pushed half into the ferns there and backed into the arena again without the leaf. I had at last seen the bird in the act of cleaning house. The effect was odd. The moment it took the leaf into its beak its whole manner changed, and the slow, waiting, patient, calling emotion gave place to a worried, hurried, very undignified, practical sense of orderliness, which passed as soon as the leaf had been consigned to the scrap basket of the jungle. As the caller, it typified a bird of the wilderness; when carrying the leaf, it might have been a fat domestic hen running off with a bit of food.

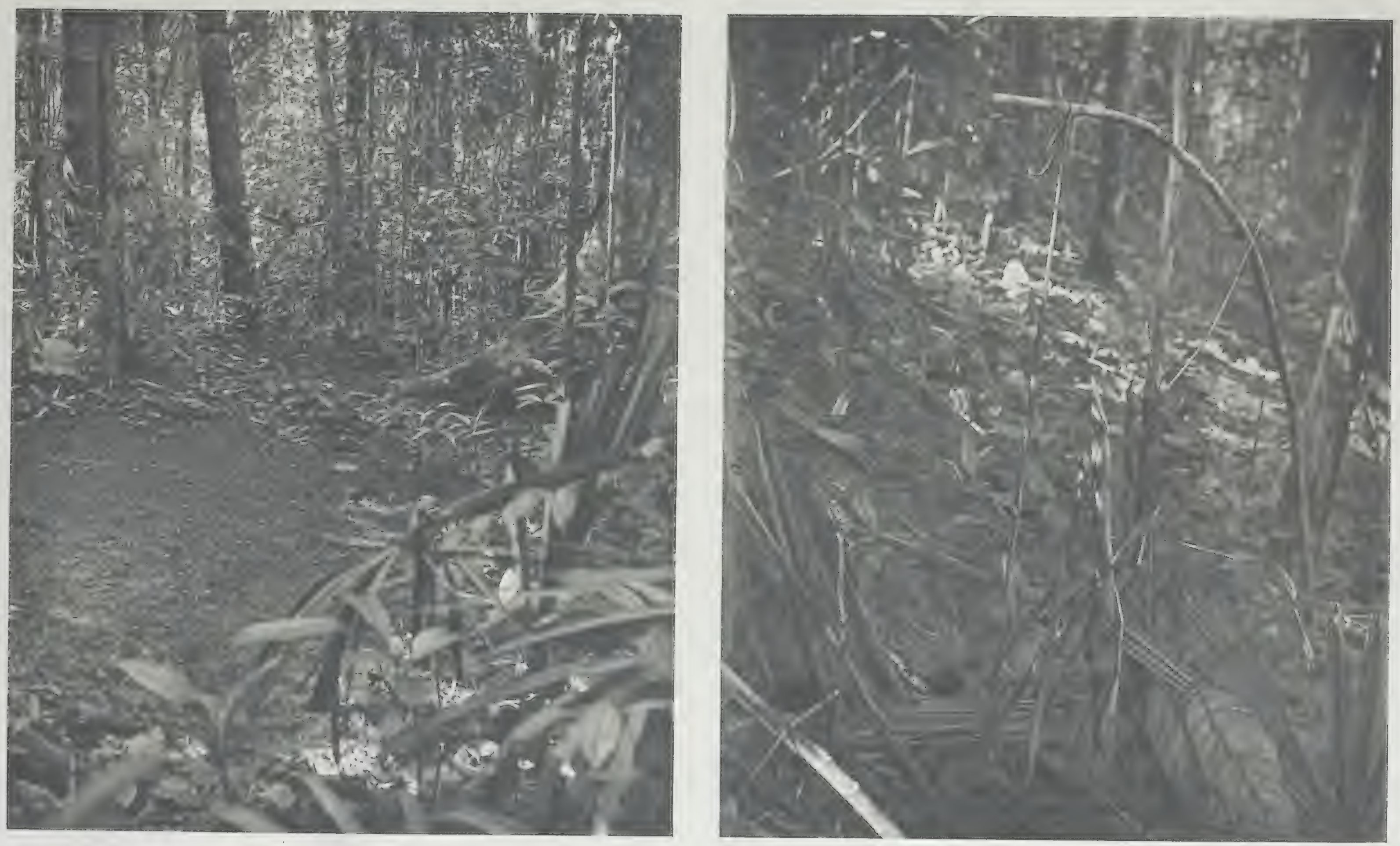
I doubt if the Argus was half as desirous of a mate as I was anxious to have one appear, and for an hour two very hopeful beings kept watch together at that arena, one calling and walking about, the other tensely watching and listening underground, jumping at every sound of wind or squirrel in the jungle, magnifying every movement of a fern frond as the advance of an answering hen. But we were both doomed to disappointment, and my luck at that clearing ceased for ever. My next tryst was most unromantically ended by an invasion of fire-ants.

This was earlier in the afternoon of another day, and for an hour I watch the jungle life about the clearing. The old buttressed tree overhead is ancient, it was probably old long before the first white man set foot on this great island. Another, almost as venerable, looms up a few yards off to the left. Elsewhere grow many lesser trees close together, fighting in the upward race for light and air. All are mottled and marbled with lichens, green, grey and brown, while the spots of sunlight sift through in a thousand bits of warm yellow glow. For all I know, the dancing-place in front of me might be as old as the tree which overshadowed it. An old, old Dyak chief led me to this arena and told me that his father had trapped many Argus in it, and no one knew when there was not an arena here. Few hills have a clearing of such unusual size as this, and the total absence of all the dense growth which crowded up to the very edge would hint of many years of occupancy.

The air of the glade was heavy with an exotic perfume, for I accidentally crushed some leaves before entering my hiding-place, and they gave forth a strong aroma as of camphor. The scented air throbbed with the low drone of cicadas. Huge black and amber ants wandered slowly, aimlessly, about the edge of the clearing, so large that they were conspicuous several yards away. At the very margin, close to my hiding-place, a curious trilobite-shaped creature crawled awkwardly. Butterflies and flying lizards seemed to have pre-empted the arena as a place of pleasure, especially the great black and white lacery butterflies, nameless except to the entomologist, who calls them *Hestia*. These great jungle insects flitted slowly, deliberately about, soaring now and then, gracefully as vultures, across the sun-spattered glade. The flying dragons crept like little grey mice up the tree-trunks, inflated their queer comical throat pouches a

DANCING-GROUND OF A FULL-GROWN ARGUS PHEASANT, AND NATIVE SPRING-TRAP WHICH CAUGHT THE BIRD

The Dyak hunters have two ways of securing Argus Pheasants: they sometimes drive a sharpened bamboo stake into the centre of the arena, which the bird attempts unceasingly to uproot, and in so doing ultimately cuts its own throat; or a spring-trap is set with the treadle concealed in the escape trail, and sprung by the bird the first time it passes.



DANCING GROUND OF ARGUS PHEASANT AND NATIVE SPRING-TRAP WHICH CAUGHT THE BIRD.

few times, as if puffing with exertion, and then suddenly spread the miracle of their rainbow wings and scaled smoothly to a distant trunk. A family of wa-was swung past, and a pair of tupaias pursued one another madly across the clearing. Then three paradise flycatchers came out of the jungle, a male in purest white with long sweeping tail plumes, longer in proportion even than those of the Argus itself.

And now a rustle in the underbrush drew my attention, and I was prepared to see the splendid bird step forth and claim his jungle home, when the fire-ants found me out. These villains work almost wholly at night, and when they discovered my hiding-place it must have seemed some splendid dispensation of the god of ants. Outside was brilliant sunshine, where no fire-ant, true to his traditions, could labour, here a ready-made hollow, dark with the darkness of night, and, wonder of wonders, filled ready to hand with a great store of living food. Three or four scouts located this manna simultaneously and proceeded to take possession of it in approved fire-ant manner. The great sharp jaws take the firmest kind of a bull-dog grip, and close fast, giving a splendid purchase for striking full force with the poisonous sting at the opposite end of the body. I am a trained ornithologist; to learn a new fact, to ferret out some hidden habit, I would undergo much pain and cramping of body and limb. But I am also a human being, and the coming of the said pain must permit an appreciable amount of anticipation; must allow at least an instant's bracing with the will, a moment of conscious determination to resist stoically. When one is crouched underground, tense with excitement, with one's whole being concentrated on the external world, and a lighted match is applied simultaneously to several portions of one's neck and body, I doubt if the enthusiast lives who could avoid arising from such a grave without dignity or delay, regardless of aught of scientific interest. And he would indeed have superhuman control of his temper, a more than Mohammedan horror of taking life, did he not remove those five ants with little of gentleness and reduce them to forest debris beneath his heel! This paragraph is not a direct contribution to the ecology of the Argus Pheasant of Borneo, but it is a sidelight on the difficulties which an intruder has to encounter in prying into the privacy of these jungle folk. If the rustle in the underbrush was made by the pheasant I was never to know it.

I signalled twice, and in a minute or two my small Dyak helper, Sangow, ran up. He is only eight or ten years of age, but all the lore of the jungle is his. He knows scores of birds and animals by name, and has wonderful eyesight, often pointing casually to a flying lizard up on a tree-trunk which both my eyes and glasses refused to detect until the creature takes to flight. He can tell at a glance the difference in the digging of a big varanus lizard and a binturong. A scrap of loin-cloth and two brass ear-rings formed his outfit in life, and his entire body was grey and scaling from a skin disease, not contagious, but none the less loathsome. But the likeable personality of the little fellow soon made me forget the unpleasantness of his epidermis, and we had many tramps together. Only I could never quite overcome the creepy feeling which his sudden appearance produced, popping like a pale, grey wraith or jungle sprite from behind a tree-trunk. Strange little savage! He would never pose in the dancing-ground for a photograph, but later, when I diverted him by spattering his little grey legs with ink from my fountain pen, I gained his confidence and he timidly consented to squat while I took his picture.

When I finished my photographing, I looked around the dancing-ground, and, admitting my defeat, ruefully made my way back to camp.

It was at another dancing-ground and before the above experience that I witnessed the actual display of the male Argus. Although I am probably the first person who ever saw a wild bird thus show off, it was the hen which interested me the more, for I had seen the display itself several times in captive birds, and it offered nothing new or unexpected. I was safely hidden in my underground hole with a full view of the clearing. A male Argus, full feathered and perfect, had been walking restlessly about, occasionally taking a few steps into the jungle and back again. Once he stopped within six feet of my hiding-place, when I closed my eyes and froze stiff. It seemed to hear or sense something to the west of the clearing, and after a short time, surely enough, a female walked quietly in from that direction. This and other meetings which I observed have led me to think that after the female once responds, she remains associated with the male for several days or a week, during which time I believe the male wholly ceases his calling. The meeting was characterized by no great enthusiasm on the part of either bird, but both were restless and seldom still for more than a few seconds. She had been present for perhaps five minutes when the male began to show signs of displaying. He followed the hen about, endeavoured to get in front of her, raised the feathers of his head and ruffled those of the neck. Now and then a half-hearted lift would be given to his wings, but they would soon settle back again into position.

Suddenly he turned and ran headlong toward the escape trail, and to my astonishment there stood a second female. The brief glimpse I had was enough to show that the bird was not a young male. But this plurality of applicants for his favour was evidently not to his liking, for he gave her short shrift and dashed full tilt after her as she turned to flee. In half a minute he returned, and female number two did not appear again. This action on the part of a decidedly polygamous bird is hard to explain, and I saw nothing further to clear it up. Within a few minutes after his return, the male Argus spread his wings, and with the last rays of the sun sifting through the branches, the wonderful bird stood thus, now and then quivering all over and rustling his marvellous plumage. His back was toward me, but although he kept in full display for at least a minute, not once did he attempt to push his head through the feathers to observe what was going on. I could see the hen about half the time, and the aggravating creature paid no more attention than if she had had the clearing to herself. For some seconds a buzzing beetle interested her, and eyeing it closely she ran toward it when it alighted and eagerly seized and swallowed it, after beating it two or three times against the ground. The Argus soon lowered his fan, and then his enthusiasm too seemed to ebb, and the two birds walked slowly off through the little arched escape trail, beginning to scratch and pick up food when they had gone only a few yards down the slope. For many minutes they remained within earshot. I waited until dark set in, and then signalled and left with my men. There was no calling from this arena for the next two nights, but after that the bird called frequently.

This experience, dove-tailed into a number of others which I had, led me to realize that the routine of the Argus is different from what we have usually thought. The calling is most usually heard in early morning and late evening, also frequently on moonlight nights, and unquestionably, as far as this summons goes, the bird is truly crepuscular or semi-nocturnal. And the hen too must be awake and on the move to respond to the call. But in all other respects and in its other phases of life it is as diurnal as any pheasant. It is absurd to think of the bird showing off in the blackness of a tropical night, the clearing made doubly dark by the dense overarching jungle. When the hen comes to the arena the male ceases his calling and gives his full attention to her. They feed during the day in the jungle round about, and when they enter the clearing he usually displays before her, during which performance she stretches herself, arranges her plumage, and to our eyes politely bored, merely tolerates the magnificent courtship, until the whim comes to walk away. Whenever she goes, the male Argus accompanies her, and at night they roost close together, near or on the identical roost which he uses when alone. This latter fact was not difficult to prove, as the roost is almost always close to, sometimes overlooking the dancing-ground. Careful study of the sign each morning tells the story of the number and position of the occupants the night before. Finally, the birds mate and the hen leaves soon afterwards, perhaps immediately. The calling then begins again, and continues at intervals until another hen comes, or the breeding season passes.

There is most assuredly competition, which takes place in several ways. First the cocks must find, seize or make a dancing-ground; and once being in possession, they must defend it against, not only immature birds as we have seen, but undoubtedly against wandering full-grown pheasants as well. And it is very doubtful that just because a hen has been lured to one of these arenas by the cry of a male, that she will of necessity accept the owner. There must be some quality in the cries, some discernible characteristic upon which choice is based, otherwise a male with an arena favourably situated as to acoustic properties would monopolize all the hens entering that district. If my coarse hearing could readily detect the throaty voices of the immature males, regardless of their mobility, how easy it would be for the keen ear of a female, attuned as it must be to this of all calls, to pick and choose. The fact that I have heard as many as six adult birds calling at once shows that keen competition exists here, and even if a female enters a certain clearing, if the male is not pleasing to her, there is very likely to be ringing in her ears the call of another not far away. So the solitary nature of these birds by no means precludes competition between them.

The Dyaks have a belief that when once a dancing-place is deserted, or the occupant is killed, it will never again be occupied by an Argus, but they gave no reason for this and all had received the belief at second hand. If the birds will wage fierce battles for the rights to any one dancing-ground, I see no reason for believing that a wandering, arenaless bird would ever scorn a ready-made but unoccupied clearing. The arenas seem all to be deserted after the breeding season, as the Dyaks say that none can be trapped there for several months. We can only surmise whether the same birds return to their respective dancing-places, but with their strong instinct for localization, it is extremely probable that this is the case. Here again is a marked opportunity for competition, for another may have arrived before him and assumed the nine points of the law. The ensuing battle is probably of the most stubborn character, for both birds would be inspired by powerful emotions; the one by actual possession of a ready-made clearing, the other by memory and a reasonable sense of ownership. But whether they have any but the crudest instincts and feelings in the matter, their lives, as we view them, are absorbingly full of interest.

I saw nothing of the actual nesting of the Bornean Argus, but Dyaks in widely separated villages and from different tribes told me that Ruoi laid two eggs, at the time of year corresponding to our March and April. Two eggs which I examined were fowl-like in general shape and colour, clear white and rather glossy. They measured 46 by 66, and 48 by 67 mm.

RELATION TO MAN

The eyes on the wing-feathers of the Argus Pheasant are used by some of the inland tribes of Borneo as decorations. Twice only have I seen these feathers used in head-dresses, once by one of my dancers near Kapit, and again by a strange savage whom I met in the jungle to the west of the Balleh River. Usually the hornbill's wing or tail-feathers are preferred. The war-bonnet of the Dyaks is a small round basket woven of fine cane and carefully and symbolically decorated with embroidery by the women. Long feathers are inserted in the top, the favourites being those of the hornbill, the domestic cock and the Argus Pheasant. The ocelli or eye-spots are used by the Bahan and other tribes as patterns for tattooed ornaments, especially on the leg. These are called kalong kerip kwe, meaning Argus-feather-ornaments. In connection with tattooing, the tribe of Kayans have a curious legend about the Argus; for they believe that even the animals have some knowledge of this art. Both the Bornean crow and the Argus Pheasant were once very plain, dull-coloured birds, and one day they decided mutually to ornament each other. The wise crow thoroughly understood the art of tatooing and at once set seriously to work, and was eminently successful in his efforts, magnificently to decorate his friend. Then the Argus attempted to reciprocate and render the crow a similar service. The Pheasant, however, being a stupid bird, soon soon saw that his work was not prospering, and taking the whole of the black pigment, he distributed it uniformly over the plumage of his friend, and to this day the birds wear wholly different patterns and colours.

The Dyaks have many methods of trapping Argus Pheasants, some of which are very unlike the snares of the Malays. I never heard of the blowpipe being used, probably owing to the difficulty of getting within range. The commonest way is by use of a long fence of brush, sometimes several hundred yards in length, although this wholesale method catches a far greater number of smaller birds, mammals and reptiles than Argus. The shrubs and undergowth of the forest are felled for a width of several yards and packed down tightly. Then many openings are made, each gap preferably in the vicinity of a tall, springy sapling. A little frame of woven reeds is laid in the opening of the fence, one edge raised slightly from the ground and supported by a bit of twine. To this in turn is attached the trigger which is slightly caught in a shallow notch of an arched strip of bamboo fixed in the ground. Around the platform a noose is arranged and attached to the bent sapling. The slightest pressure on the platform or treadle releases the trigger and the sapling flies up, ensnaring the victim and lifting it high above the reach of hungry four-footed animals. Even monkeys and the little muntjac deer are caught in these snares. But while the setting of traps is executed with great skill and care, the natives believe that they are of no use whatever if certain rites are not complied with; such as the condition of the weather, the presence or absence of certain plants or birds in the immediate vicinity, and many still more trivial omens. Still another method, the least skilful of all which I observed, was practised by some Dyak boys. This was merely to find out the roosting-place of the Argus, and to scatter an abundance of soft, but strong twine about on the ground beneath. This twine is made of the inner bark of some vegetable growth, and in colour closely resembles the dead leaves and other debris. The boys never had any success, but one of the Argus which was brought in to me by an up-river Kayan was entangled in a perfect maze of this twine, so much so that its broken and bedraggled plumage was useless, and I skeletonized it.

There is a general belief among the Dyaks of Sarawak, both the Sea Dyaks and Kayans, that there are two species of Argus. One they call Ruai moo-bough, which has long feathers and a striped breast, obviously the fully adult male, while the other smaller ones, immature males in fact, are Ruai lal-lung.

They give a very ingenious explanation of the reason why the Argus has two extremely long tail-feathers. The bird, they think, roosts lengthwise along some stout branch, facing outward, with the tail-feathers lying along the branch toward the trunk of the tree. When a musang, or civet cat, or other attacking animal creeps toward the bird, it treads on the tail-feathers, awakens the Argus and gives it a chance to escape.

DETAILED DESCRIPTION

Adult Male.—Feathers of the forehead and top of the head, short, black, velvety, and somewhat recurved. Those of the occiput twice as long, forming a tuft, still more recurved and slightly variegated with white. Plumage of the nape and upper neck, long, loose-webbed and grizzled, being indistinctly barred with black and white, with silvery white shafts. Ears encircled with a row of stiff, thin-barbed featherlets; the remainder of the head and neck being almost bare, with only a thin scattering of short, degenerate, white featherlets.

The lower hind neck, entire mantle, wing-coverts (except the primary coverts), and the tertiaries give a general impression of a black ground, irregularly dotted and checkered with white. The visible portion of a typical mantle feather, shows, on the black ground, numerous dots and angular spots of white, mingled with, and separated by, still smaller and more numerous, inconspicuous, chestnut markings. On the concealed portion of the web the chestnut disappears and the white falls into broken, oblique cross-bars. On the wing-coverts and innermost wing-feathers the white assumes the oblique cross-bar pattern quite to the feather tip, bars which are usually strongly noded. When these nodes become large enough they break through the black and coalesce, cutting up the black into large round dots, linearly arranged. This pattern characterizes all those portions of the secondaries visible in the closed wing, the primaries, and much of the tail, the pigments varying in the different areas.

The entire back, rump and all but the longest upper tail-coverts are bright vinaceous buff, shading at the base of the feather into grey, and conspicuously dotted with large, round, black spots more or less regularly disposed in oblique rows. These contour feathers are very delicate, the shaft becoming extremely attenuated and the entire web thin and pliant.

The alula or thumb feathers are dark slaty grey, with large black spots, round or kidney-shaped, framed in chestnut, and more abundant on the outer than on the inner webs. The inner web near the shaft is stained with a ferruginous sulphur yellow, hinting of the magnificent ocelli on the secondaries. The greater primary coverts are somewhat similar, but with a paler grey ground, becoming white on the innermost of this series, which colour is reduced to a network by the increased size and tendency to coalesce of the black and chestnut ocelli.

The general pattern of the primaries is like the above, except that the grey is replaced on the outer webs of the inner feathers by a gradual change to fawn or vinaceous buff, and finally, at least on the outer web, to yellowish-white. The basal part of the shaft is orange on its dorsal aspect, changing abruptly to bright blue throughout the greater part of the feather. For much of the length of the web, a series of short black lines extends at right angles from the shaft into each web, the interspaces on the inner web being olive, marked with bright orange yellow, this colour forming a solid line where the black lines die out on the distal part of the feather. In the centre of the inner web is a broad band of bright chestnut, finely dotted with tiny, distinct specks of white. The rest of the feather is dotted, like the alula and coverts with chestnut-framed black spots, becoming fewer in number, but larger, toward the tip.

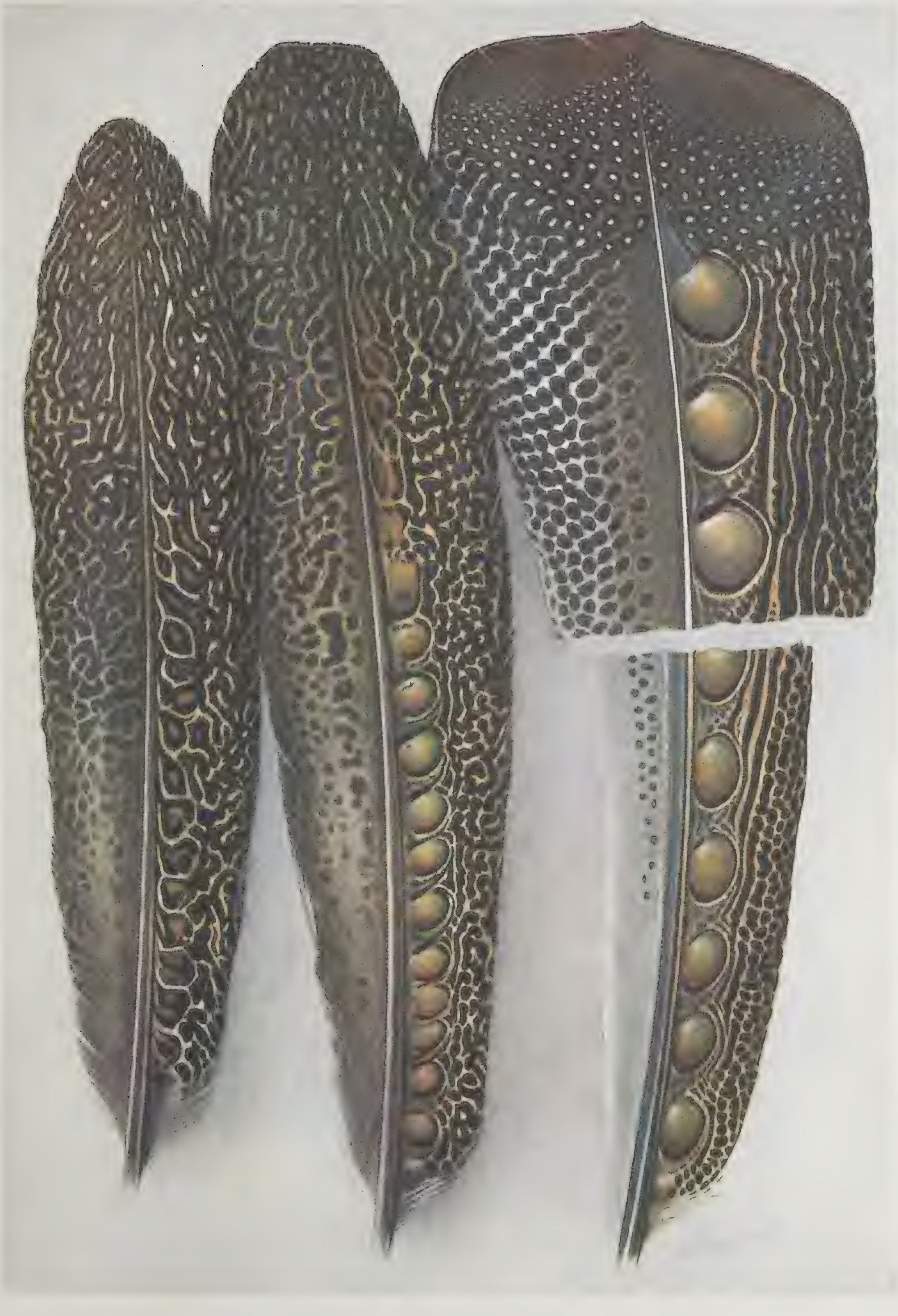
The secondaries are the supreme decoration of this most wonderful of pheasants, and their chief beauty lies in the line of ocelli close to the shaft on the outer web. In the longest secondary there may be more than twenty-five of these ocelli, the largest 25 mm. in diameter. They are rather retort-shaped than round, framed in jet-black, which in turn is sharply set off by the pale buff background of the feather. The pupil of the eye shows a surface of gently shading pigments. Starting at the side toward the base of the feather, a zone of deep lustrous wine-colour or chestnut shades into olive green externally, this changing into yellow toward the shaft. Then comes a shaded patch of white shading to grey, like the reflection of light in a real eye. This in its turn, at the distal side of the ocellus, is replaced rather abruptly by vinaceous.

The side of each ocellus touches the shaft, and they are separated from one another by an irregular dotting of black on the pale buff. The remainder of the web outside the ocelli is pale vinaceous buff, across which extend broad, acutely oblique, black lines, one starting from each ocellus, and before reaching the margin of the web, breaking up into closely set, round dots of equal width with the line. A narrow streak of chestnut extends down the centre of some of the lines. The inner webs of the secondaries are slaty grey near the shaft, paling to pure white, and covered in both areas with a multitude of round black dots, set in a pale narrow frame. The tip of each feather shows a zone of white dots, decreasing to the vanishing point at the extremity, and encircled by a more or less dominant network of dull chestnut. On the scapulars and tertiaries the first hints of the ocelli are visible in the form of chestnut marks in the centre of the black dots, this red changing to orange and yellow, and by its increase, splitting and inflating the black spot into an encircling ring.

The longest upper tail-coverts are white, thickly set with rows of crescent-shaped black spots, with chestnut centres, many of the spots coalescing more or less intimately. The tail-feathers are twelve in number and the central pair are enormously elongated,

EVOLUTION OF THE EYES ON THE WING-FEATHERS OF THE ARGUS PHEASANT

The gradual development of the ocelli or eyed spots on the secondary wing-feathers is beautifully shown by the successive feathers themselves. Starting as a slight irregularity in the buff markings, the next stage shows two of these lines approaching and enclosing a dull reddish-brown stain. This takes form roughly circular, acquires a frame, and finally evolves into the marvellous eyes, large, round, illuminated from one side, shaded, so that when the feather is slightly vibrated they appear to revolve swiftly, like brilliant balls suspended in darkened sockets. These are all unquestionably brought into play in courtship, but the object of the delicate detail is a mystery, for it certainly does not affect the hen directly, either by artistic design or harmonious colour.



EVOLUTION OF THE EYES ON THE WING-FEATHERS OF THE ARGUS PHEASANT.

being sometimes four times as long as the outer pair. As in the primaries, the shafts are basally orange, changing to blue. The inner webs of these feathers are grey, marked and spotted with angular white hieroglyphics. Along the shaft are a number of inconspicuous ocelli, rounded areas of a dull citrine-drab, framed in broken black and white. The outer webs are black throughout their inner half, changing abruptly to a dull chocolate, everywhere speckled with small white dots, framed, in the chocolate area, in black.

The outer webs of the lateral tail-feathers are jet black, dotted with white. Near the shaft and toward the tip of the feathers the white spots coalesce into a network, while on the inner webs this network is very pronounced, forming irregular interspaces which are tinged with a spot of citrine-drab, this changing to a rufous toward the extremity of the feather.

Lower fore neck and upper breast clear, bright, orange rufous, with shaft-streaks of yellow orange. The dominant colour of the under-parts is chestnut, but on most of the feathers the pattern consists of a succession of narrow oblique bars, black and chestnut, alternating with buff or white. The chestnut is much wider than the others, and toward the tip of the feather there is a tendency for the narrow black and white lines to encircle large spots of the chestnut, forming several imperfect, subterminal ocelli. This is especially true on the plumage of the sides. The thighs are chestnut, irregularly banded with black. The under tail-coverts black, with quite regular bars of white dots, tinged in the interspaces with chestnut.

The skin of the head and neck varies from dull pale indigo to bright cobalt; iris pale greyish brown, with a narrow outer ring of hazel; feet and legs, coral or vermilion red; bill and claws, horny white or pale horn colour, the base of the upper mandible dark brown. Weight of a full-grown male, four pounds.

Length, about 1,800 mm; bill from nostril, 18; wing, about 850; tail, outer feathers, 300; central feather, about 1,200; tarsus, 100; middle toe and claw, 80 mm. Spurs, wholly absent.

Adult Female.—Feathers on head only slightly recurved and velvety, marked with a broad, white, submarginal band. Nape and hind neck with elongated, bristle-like feathers, grey, with recurved tips. Collar around lower neck bright, rusty red, with a central area of lighter orange, mottled with black where it grades into the mantle. Entire remaining upper plumage black, variously marked with buff, warm on the mantle and back, paling on the coverts and visible webs of the secondaries. On the mantle this marking is little more than an uneven vermiculation, the black and buff being of about equal proportions. On the back, rump and upper tail-coverts, the buff vermiculation is concentrated into several wide, transverse bands, with equally broad black interspaces, either clear, or with a few coarse, irregular buff spots. On the tertiaries and outer webs of the secondaries and tail-feathers the vermiculation disappears, and the black is irregularly marked with dots and angular buffy spots of all shapes, hieroglyphed over the entire web. The inner web of the secondaries is brownish black, faintly netted with greyish white. The ocellated area of the male is indicated by a zone of orange freckling near the shaft.

The alula and the primaries are chestnut, the former strongly, and the latter faintly marked with black. On the inner web this takes the form of a network or mottling, on the outer web of outlined spots or zigzag lines. The shafts are blue.

The chin is scantily clothed with degenerate white feathers, while over the remainder of the head and neck there is only a very sparse growth of white featherlets. The ear tuft is rather dense, brown, tipped with black. The rust-red collar becomes vermiculated with black on the breast, and the red gives place to orange, and this to warm buff as we proceed posteriorly, everywhere finely vermiculated with irregular black lines. Lower abdomen, flanks and thighs, dusky, greyish brown, the disintegrated barbs banded with buff.

Tail feathers twelve in number. Shafts blue, black in colour, with irregular, angular markings, fairly distinct on the outer web, almost obsolete on the inner. On the central feathers these markings are buffy, on the outer they become chestnut.

The fleshy colours are less strongly pronounced in the female. The blue of the head and neck is paler; iris grey; beak pale horny or whitish; legs and feet red. Weight, from two and three-quarter to three and three-quarter pounds.

Length, about 760 mm.; bill from nostril, 17; wing, 340; tail, 315; tarsus, 85; middle toe and claw, 64 mm.

Chick in Down.—The bird a few days old is similar to the chick of the Malay argus, except that in general it is of a richer orange rufous, and the rufous marking on the tips of the coverts and inner secondaries is usually in the form of two rounded or irregular spots, not a complete transverse band.

A bird about ten or twelve days of age is still covered with down, the wings and tail well feathered out, and scattered contour feathers on the sides of the lower breast. Dorsal down rufous, darker down the centre of the head. The black bases of the sides, scapular and dorsal down give the appearance of black barring. On the back and rump a vertebral line of dark rich brown, about 10 mm. wide, extend from the mid-back to the base of the tail. On each side of this there is a pale buff stripe of the same extent, but narrower in width. Below, paler, the neck rufous, the chin whitish, the lower parts colder grey.

The lesser wing coverts possess the most unique juvenile marks, central, subterminal yellowish buff spots, surrounded with black. These fall into two lines, following the oblique direction of the coverts and primaries.

The sprouting primaries are rufous, mottled or irregularly barred with black, much like the adult female, but more decidedly barred. The secondaries lack the rufous, the lesser ones especially showing barred areas clear across the vane, successively of black, fine buff mottling and coarse buff mottling, one after the other. There is a distinct terminal single or double reddish spot. The rectrices are dark with faint irregular and scanty buff mottling, the four outer pairs tipped with a band of pale rufous.

Juvenile Plumage.—In birds well advanced in juvenile plumage, flecks of the orange natal down are still visible here and there on the face and side neck. The moult of the head and neck is thus long delayed, and indeed it remains quite downy through much of the brief juvenile stage. When the moult does at last occur, the adult female characters are pronounced, the face, crown, chin and throat being almost identical.

DOUBLE-SPOTTED ARGUS PHEASANT

A. Primary feather of the Malay Argus Pheasant, *Argusianus argus*.

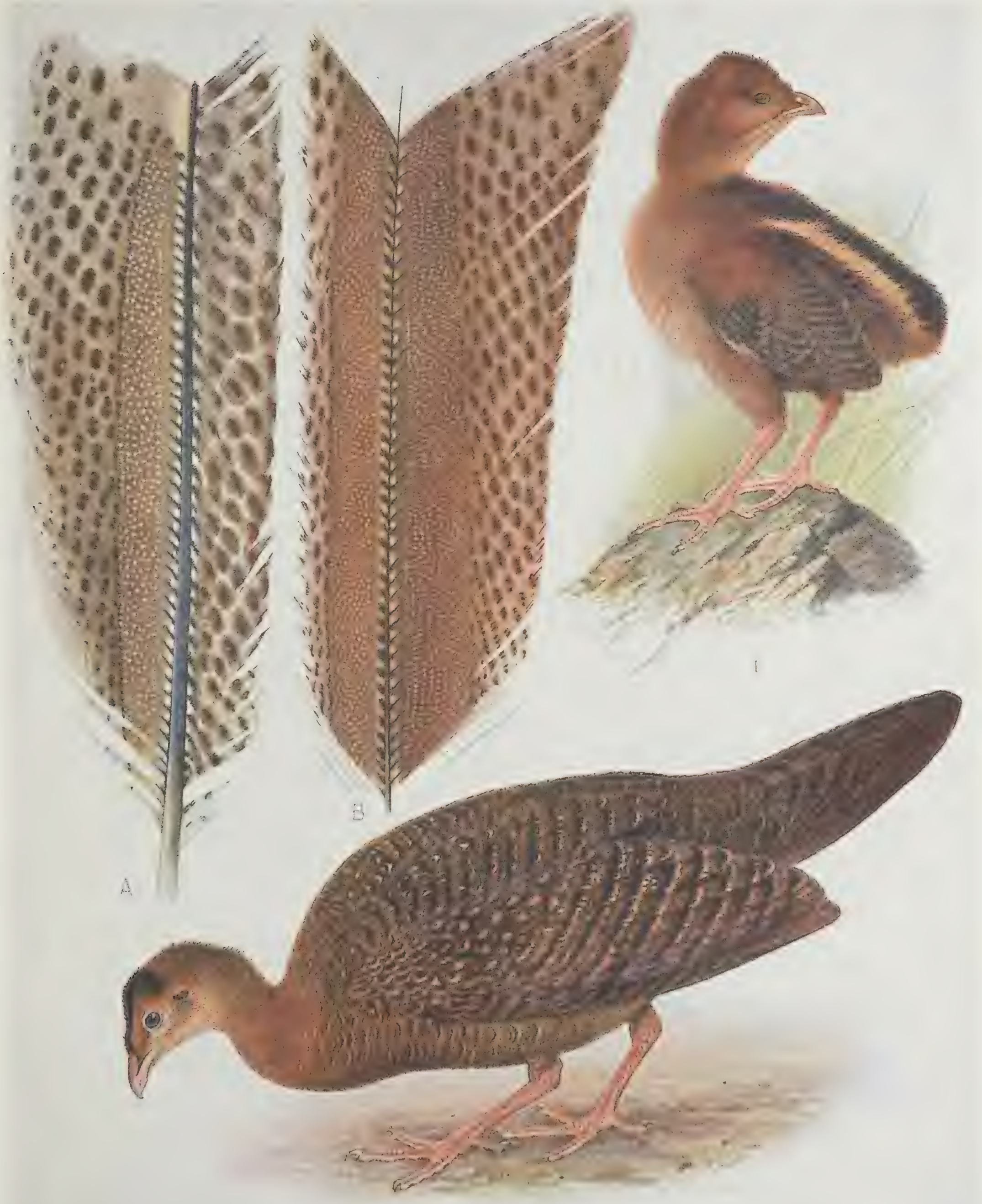
B. Primary feather of Double-spotted Argus Pheasant, *Argusianus bipunctatus* (Wood).

This feather differs from all other Argus wing-feathers in having dotted zones on both webs. It is in the collection of the British Museum, but we have no clue as to discoverer or locality.

PLUMAGES OF BORNEAN ARGUS PHEASANT

1. Chick in down.
2. Male in juvenile plumage.

PLATE LXXXV.



PRIMARIES OF MALAY AND DOUBLE-SPOTTED ARGUS PHEASANTS,
AND PLUMAGES OF BORNEAN ARGUS PHEASANT.

The crown feathers are centred with rufous instead of white, however, and the face and neck much more thickly feathered than in the adult female. The bare skin even at this early stage shows a decided bluish tint, hinting of the adult pigmentation. The nuchal plumage is of rather elongated, recurved, slightly stiffened rufous feathers, becoming shorter on the upper neck. There is as yet, however, no indication of the extremely specialized long, bristle-like feathers of the adult birds. On the lower neck faint, pale, buffy tips begin to appear, simultaneously with considerable black mottling and cross-barring. These buff tips are essentially juvenile and never present in fully adult birds, although they may recur throughout several moults. On the mantle, scapulars and lesser coverts this mark becomes a distinct, sub-terminal ocellus, set in a black frame. On the tertiaries and inner secondaries the ocelli become indistinct, while the entire feather in the former, and the outer webs of the latter, show a series of regular, delicately shaded cross-bars. Each bar is composed of a proximal broken bar of pale-buff, angulated lines which merge gradually into a rufous vermiculation, which is then succeeded by a bar of the clear, brownish-black feather background, giving the successive bands of buffy-rufous, black, buffy-rufous, black. The primaries show no barring, the ground-colour being rich rufous, with dark mottling.

The juvenile rectrices are exceedingly characterless, being brownish black, with a faint, indistinct freckling of pale rufous. They are narrow, curved and rather pointed, while those of the succeeding post-juvenile or first-year plumage are broader, straight and more truncate.

The back and rump are black, abundantly mottled with dull rufous buff, with distinct terminal buff and sub-terminal black cross-bands. These are very narrow, and are much like those found in the adult female.

The ventral neck and upper breast are plain warm rufous with terminal bands of buff and black. The breast and under-parts are paler buff, thickly mottled or irregularly barred with black. Bill from nostril, 6 mm.; wing, 238; tail, 180; tarsus, 68; middle toe and claw, 50 mm.

In the juvenile there appear to be only five pairs of tail-feathers, and the sequence of growth compared with that of the six pairs of the adults would indicate that the central pair is the one which is suppressed, or rather which has not yet developed. A pair of upper tail-coverts partly replaces this lack, and persists long after the others of its series have been shed, thus bridging over, in a sense, the gap, when the pair of true central rectrices has not yet appeared. They are much shorter than the juvenile rectrices, about 38 mm. as compared with 100 to 130, but they must assist materially in strengthening the central part of the tail. Their extremely worn appearance shows that they play an important part in the functions of this organ.

In a bird where the post-juvenile tail moult has begun, there may be seen feathers of three distinct plumages. Around the eye and elsewhere on the head and neck there remain traces of the down plumage; the body as a whole and the inner and outer rectrices are juvenile feathers, while the central tail-feathers are those of the succeeding post-juvenile or first year plumage.

First Year or Post-Juvenile Male Plumage.—Throughout the first year the male Argus is clad in much the general coloration of the female, devoid as yet of the wonderful patterns which characterize the adult. The head and neck, delayed as usual in their moult, more nearly approximate the appearance of the old bird.

The mantle is black with irregular reddish-brown mottling, and differs from the corresponding feathers of the female in having a scattering of long, angular, pale buff lines. There is scarcely any difference in the back and wing-coverts. The rump of the young male is much warmer, black with several transverse bands of reddish-brown mottling.

The outer primaries are rich chestnut, dotted on the outer web and thickly mottled on the inner web with black. The inner primaries are orange rufous, with a lighter orange-buff streak along the outside of the shaft. The outer web is dotted with round and elongated black spots, these being blurred by deep chestnut stains. The inner web is greyish proximally and thickly dotted along the inner margin and the extremity of the feather. We can easily trace the direction of moult from the inner primary outward by the gradually maturing of pigment and pattern, reflecting the changes in the blood corresponding to the successively appearing feathers. In the latest incoming primaries, such as the 8th or 9th, the feather in some advanced individuals in this plumage is quite pale grey, the spots on the outer web distinct, black, framed in chestnut, and there may even be a fairly well-developed zone of white specks on the inner web. This, however, is never found on more than one or two primary feathers at this age. The second series or secondaries are decidedly feminine, black hieroglyphed with dots and angular spots of pale buff, the outer web tinged with orange near the shaft; the inner web black with an indistinct greyish-white network. In this series, too, the direction of moult is clearly revealed. The central tail-feathers differ but little from the others both as to colour and length. The ventral plumage is like the female but more rufous.

Second Year Male.—The slow development of the Argus Pheasant is shown in this plumage. All the adult characters become apparent, but only imperfectly developed. As might be expected, where there is considerable latitude in moult as in many other tropical birds, there is great variation in this plumage. This is especially true as regards the development of the ocelli on the secondaries, the pattern of the rump and the central tail-feathers. In the case of the first character, there is an important difference both in size and pattern compared with the adult.

The primaries of this plumage are about twenty per cent. below the full adult length, the outer secondaries thirty-three per cent., and the inner ones often forty per cent. shorter. The ocelli are present on the latter but are small, dull in colour, and the black frames are very seldom complete, forming comma-shaped instead of round eyes. In early moulting birds they are especially imperfect on the terminal half of the feather, dying out in the shape of an olive yellow spot, and finally a small chestnut spot in the centre of a black area.

Instead of the long, delicate vinaceous-buff feathers of the rump are found small stiffer feathers, with a similar ground colour but with the spots coalesced, often forming solid transverse bands, mottled centrally with chestnut. The median tail-feathers always extend beyond the others, but to a comparatively short distance compared to these feathers in the adult. While the other rectrices may almost equal those of the full-grown bird, the central pair is seldom more than half the length which it will ultimately attain.

THIRD YEAR MALE.—I have examined birds which had completed this moult, and the change was only another step towards the perfection of the adult. It is probable that the bird can breed at this age, as I have found evidences that its display is regular, and birds in this state of development were twice trapped in possession of dancing arenas. But it is also as certain that, judging by the rate of growth observed, one or two magnificent males in my possession must be fully five years of age, and I believe that this is the moult at which they attain their most perfect plumage.

OCELLI.—Charles Darwin in his "Descent of Man" has given an elaborate description of these ornaments on the secondary feathers of the Argus Pheasant. His description is very precise and exact, but his derivation of the perfect ocelli from "elliptic ornaments" is only one of many such origins which might be adduced. This elaboration may be studied in any one moult by examining the series of secondaries from the first to grow out to the last which completes the moult; or we may compare the feathers of successive moults from the first year onward; or, again, we may take any one feather and follow the gradual diminution and disappearance of the ocelli, both at the proximal and distal ends of the line of ornaments. This will reveal the fact that not one but several methods of development may be deduced, each of which of course depends on the amount and distribution of pigment.

As to the idea that conscious visual sexual selection has brought about this wonderful plumage I have already given my opinion. It seems impossible to conceive, much as we should like to believe in it, and personally, I should be willing to strain a point here and there to admit this pleasant psychologically æsthetic possibility; but I cannot. I remember once in the heart of British Guiana one of my servants entered the bungalow with a dish of venison for the evening meal, and on the sleeve of his coat was a hemipterous insect, a true bug, with gorgeous gauzy wings of rose and gold. For five minutes I studied them with a hand-lens, and on the folded fan of tissue pinions I found the ocelli of the Argus, as perfect, as truly deceiving in the sense of appearing to revolve within sockets; with the same light-shaded reflection in each, with pigment even more brilliant and pattern more complex. If I grant that æsthetic appreciation and selection based upon that phenomenon is the only explanation of the eyes of the Argus, then I must acknowledge that the same holds true for the female hemipterous bug with her faulty, faceted means of vision. If, however, it is the general colour and movement and insistence of display in each case, which acts subconsciously through the combined sense impressions, I feel that I am within the bounds of probability in each organism. As to the question of the extreme refinement, the needlessly microscopic exactness, the amplitude of detail of the ornamentation, I candidly answer I do not know. If it be not a mere impetus of perfection, the accumulated result of the generalized sexual selection on the part of the hen (which assuredly exists), carried beyond necessity, then, *quien sabe!* The answer may come soon. When it does it will probably be a complex of factors. We are at least learning not to explain *all* colouring by protection, or warning or sexual theories, but by a realization that all of these have their balanced place, controlled, obliterated or enhanced by unknown factors, the ignorance of which should not humiliate or discourage, but only inspire us to more intensive, more logical philosophical study.

SYNONYMY

Argus giganteus Müll. (nec Temm.) Verhandl. Land-en Volkenk. 1839-44, p. 439; Sclater, Proc. Zool. Soc. 1863, pp. 124 [part] and 222; id. List of Phas. 1863, p. 12 [part], [Borneo].

Argus grayi Elliot, Ibis, 1865, p. 423 [Borneo]; id. Mon. Phas. I. 1872, p. xviii. pl. 12 [text], [Borneo]; Sharpe, Ibis, 1877, p. 23 [Bintulu]; id. Ibis, 1879, p. 267 [Lawas R.]; d'Aubusson, Bull. Soc. d'Acclim. 1887, p. 603; Elliot, Auk, VIII. 1891, p. 14 [N.E. Borneo].

Argusianus grayi Gray, List Gallinae Brit. Mus. 1867, p. 26; id. Hand-list of Birds, II. 1870, p. 257; Walden, Ibis, 1872, p. 381; Salvad. Ucc. Born. 1874, p. 305; Sharpe, Ibis, 1877, p. 23 [Kidurong Bay, Bintulu]; Brüggemann, Abhandl. vom naturwiss. Vereine zu Bremen, V. 1878, p. 463; Sharpe, Ibis, 1879, p. 267 [Mengálong River, eggs]; Guillemard, Proc. Zool. Soc. 1885, p. 416 [Silam, Sandakan]; Everett, List B, Born. 1889, p. 197; Sharpe, Ibis, 1890, p. 138 [Benkoka, habits]; Sharpe, Ibis, 1890, p. 284 [Lowlands of Borneo]; Hose, Ibis, 1893, p. 422 [Mt. Dulit, 2,000 feet]; Grant, Cat. Birds Brit. Mus. XXII. 1893, p. 365; Grant, Handbook to Game-birds, II. 1897, p. 73; Sharpe, Hand-list of Birds, I. 1899, p. 40; Büttikofer, Notes Leyden Mus. XXI. 1900, p. 270 [Mount Kenepai, Mount Liang Koeboeng, the Upper Mahakkam, Dutch Borneo]; Oates, Cat. Eggs, Brit. Mus. 1901, pl. VI. fig. 4; Blasius, Jour. für Orn. 1901, p. 67 [Padas-Flusse, Britisch Nord-Borneo]; Finsch, Notes Leyden Mus. XXII. 1901, p. 177 [Mahakkam, Central Dutch Borneo]; Oates, Cat. Eggs Brit. Mus., I. 1901, p. 61, pl. VI. fig. 4; Nieuwenhuis, Quer-durch Borneo, I. 1904, pp. 138, 198, 456, 462; Nieuwenhuis, Notes Leyden Mus. XXVI. 1905, pp. 22, 139; Finsch, Notes Leyden Mus. I. 1905, pp. 140–142.

Argusianus argus grayi Hartert, Novitates Zoologicae, IX. 1902, p. 538.

DOUBLE-SPOTTED ARGUS PHEASANT

Argusianus bipunctatus (Wood)

NAMES.—Specific: *bipunctatus*, Latin, two-spotted. English: Wood's or Double-spotted Argus Pheasant.

DESCRIPTION.—This species is known only from the portion of a primary feather of a male bird. In 1871 this was found among some loose Argus feathers in the British Museum, described and named by Mr. T. W. Wood. It differs so decidedly from any corresponding feather in the known species that there is little doubt that it represents a new species, although we have no idea of the country in which it lives.

The general colour is similar to that of an Argus primary, but the reddish-brown band minutely dotted with white specks which is so prominent a characteristic on the inner web of the normal Argus feather is, in this fragment, repeated on the outer web as well. These bands cover much of the segment, and the shaft is unusually narrow and attenuated.

If this should prove to be an unusual variation, it is interesting to note that it is in the direction of increased complexity of colour and pattern.

SYNONYMY

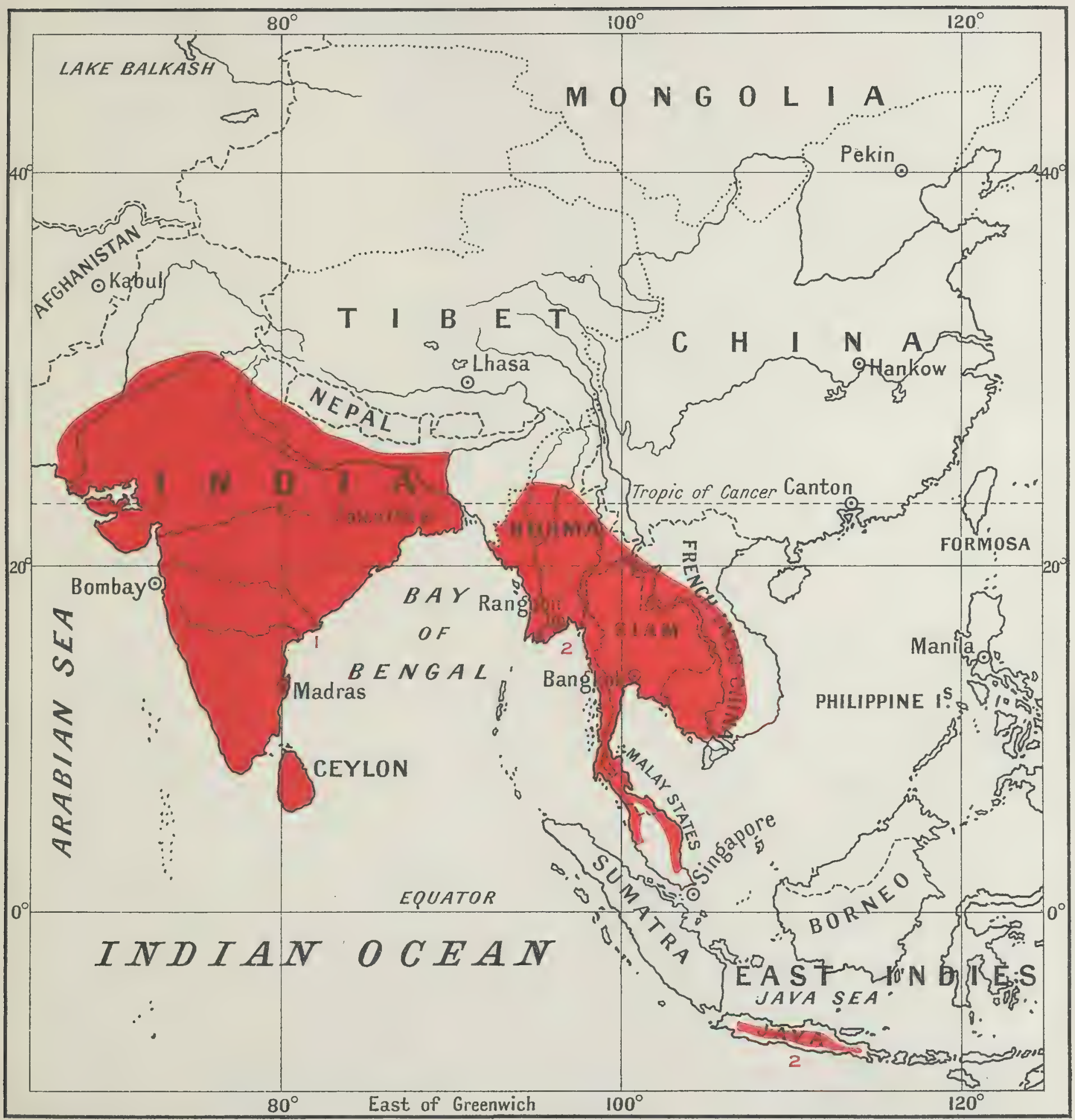
Argus bipunctatus Wood, Ann. Mag. Nat. Hist. (4), VIII. 1871, p. 67; Elliot, Monograph Phas. I. 1872, pl. 13.

Argusianus bipunctatus Grant, Cat. Birds Brit. Mus. XXII. 1893, p. 366; Grant, Hand-book Game-birds, II. 1897, p. 74; Finn, Game-birds India and Asia, 1911, p. 44.

PAVO

PEAFOWL

MAP XX.


80°
100°
120°
40°
20°
0°
LAKE BALKASH
MONGOLIA
Pekin
AFGHANISTAN
Kabul
TIBET
CHINA
Hankow
Lhasa
NEPAL
INDIA
Calcutta
BURMA
Tropic of Cancer
Canton
FORMOSA
FRENCH INDO CHINA
Bombay
BAY OF BENGAL
Rangoon
SIAM
Manila
Madras
Bangkok
PHILIPPINE I^S
1
2
ARABIAN SEA
CEYLON
MALAY STATES
Singapore
SUMATRA
EQUATOR
BORNEO
INDIAN OCEAN
EAST INDIES
JAVA SEA
JAVA
East of Greenwich

H.F.& G.Witherby, Publishers.

Stanford's Geograph! Estab^t.

MAP SHOWING THE DISTRIBUTION OF THE PEAFOWL.

Region 1. Pavo cristatus

Region 2. Pavo muticus

PAVO

PEAFOWL

Order GALLIFORMES

Family PHASIANIDAE

Subfamily PAVONINAE

Genus *PAVO*

Peacocks and Peahens have been familiar to mankind since the Phœnicians brought them from India to the Pharaohs of Egypt. I have put these birds in a separate subfamily on account of the character of the tail moult, which typically is from the sixth from the central pair outward.

Peafowl are large, strong birds, the males brilliantly metallic in colour, with an extraordinary development of the lower back feathers and upper tail coverts, which are ocellated and form an enormous train. The female in one species is almost as bright as the male, while in the other she is rather dull brown and whitish.

There is an erect, specialized crest; the first primary is much shorter than the tenth, the fifth being the longest. The tail is wedge-shaped and composed of twenty feathers. The males are armed with stout spurs.

Peafowl are exceedingly abundant in certain parts of India, where they are considered sacred. They are gregarious, living in flocks, and the voice is a very loud, discordant scream. The flight is strong in spite of the handicap of the heavy train, and in their wilder haunts Peafowl invariably seek safety in the tops of the highest trees.

Four to eight eggs are laid, usually at the base of a log or tree, with very little attempt at a nest. The courtship is elaborate, frontal, and consists of a raising of the train and the audible rattling of the quills of the tail feathers.

Peafowl form a distinctly isolated group, and we have no idea of their line of ancestry. The femoro-caudal muscle, for example, is absent in *Pavo* and in *Meleagris*, while present in all other gallinaceous birds; the syrinx in *Pavo* is simpler than in any others of its family.

PAVO

	Type
Pavo, Linné, S.N. I. 1766, p. 267	*C. cristatus.*
Pavianus, Rafinesque, Analyse, 1815, p. 219	*C. cristatus.*
Spiciferus, Bonap. C. R. XLII. 1856, p. 878	*C. muticus.*

Peafowl inhabit India, Assam, Burma, Siam, Cochin China, the Malay Peninsula, Ceylon and Java. Two species of wild *Pavo* are known:

Indian Peafowl	*Pavo cristatus* Linnaeus.
Green Peafowl	*Pavo muticus* Linnaeus.

KEY TO THE FORMS OF *PAVO*

I. An enormous train of ocellated feathers (males).
  a Crest of naked shafts, with fan-shaped tips . . . . *cristatus.*
  b Crest of feathers webbed to the base . . . . *muticus.*
II. No train of ocellated feathers (females).
  a Upper tail-coverts short and dull brown . . . . *cristatus.*
  b Upper tail-coverts as long as the tail and metallic green . . . . *muticus.*

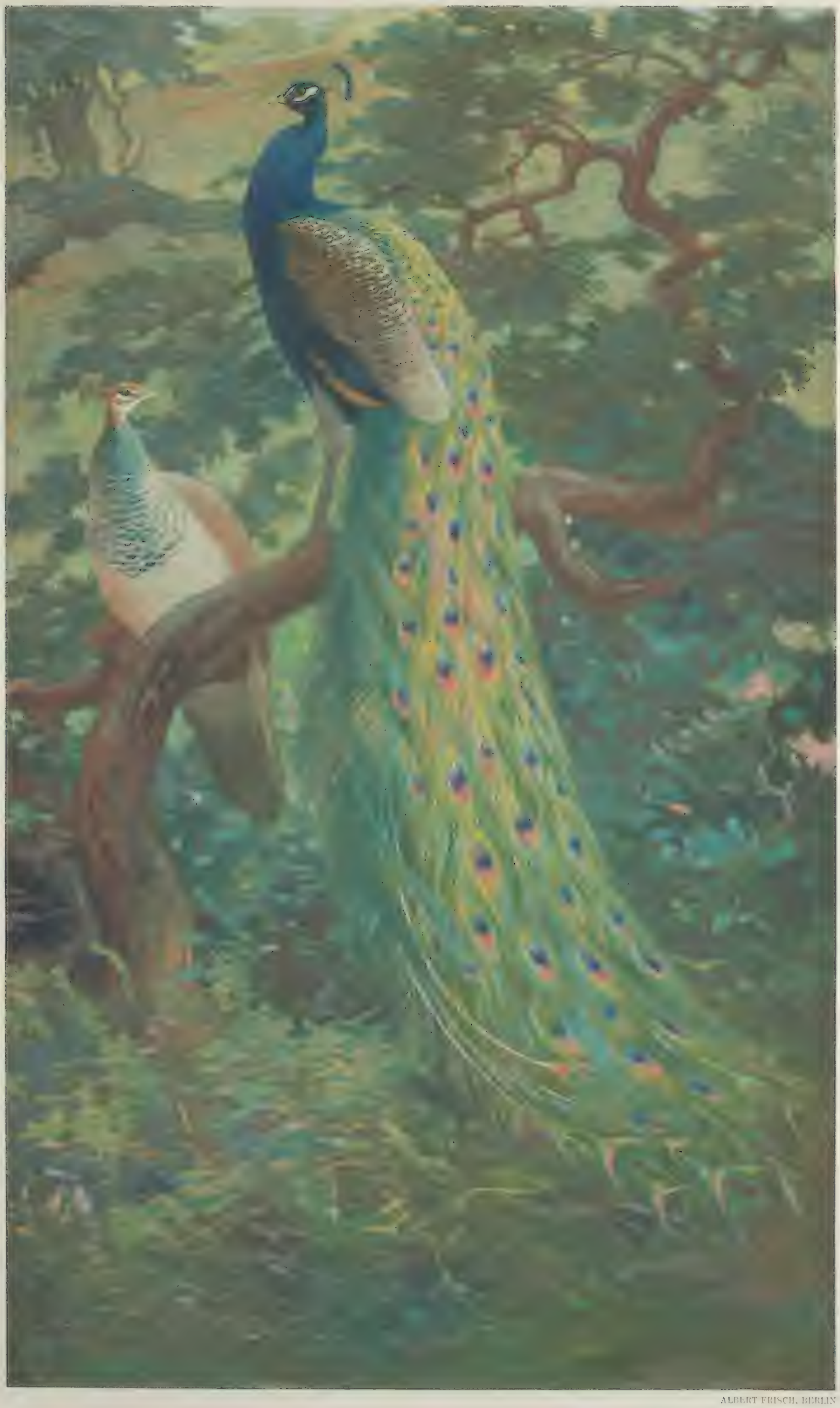
INDIAN PEAFOWL

Pavo cristatus Linnaeus

Peafowl have been familiar to mankind ever since the Phoenicians brought them from India to the Pharaohs of Egypt. Throughout history we find them praised for beauty, accused of vanity and dreaded by the superstitious; while they, on their part, accept man and captivity with the disdain and unadaptability of the aloof race of cats.

In the colour of their plumage they vie with the most gorgeous of birds, and in their courtship and display they afford one of the most remarkable sights in the world of life. No matter how often we see these birds, we should never allow ourselves to become blind to the marvels which they present.

PLATE LXXXVI.



ALBERT FRISCH, BERLIN

INDIAN PEAFOWL.

INDIAN PEAFOWL

Pavo cristatus Linnaeus

NAMES.—Generic: *Pavo*, Latin, a Peafowl. Specific: *cristatus*, Latin, crested. English: Common or Indian Peafowl; Peacock; Peahen. French: Paon commun. German: Pfau. Vernacular: Mor (Upper and Central India); Ta-us, Landuri, peahen (Mahratta Districts); Menjur (Western Duars); Mujur (Nepal Terai); Mabja (Bhutia, Bhutan); Mongyung (Lepcha, Bhutan); Moir, Moira (Assam); Dode (Garro Hills); Myl (Tamil); Nimili (Telugu); Nowl (Canarese, Mysore); Mohr, peacock, Bodur, peahen (North-western India); Mor, peacock, Morela, peahen (Hindustanee, Lucknow); Monara (Ceylon); Manir, Nanja, peacock (Uriya, Orissa).

TYPE.—Locality: "Habitat in India orientali, Zeylona." Describer: Linné. Place of Description: Sys. Nat. I. 1766, p. 267.

BRIEF DESCRIPTION.—Male: A tall, spatulate crest; facial skin whitish; head and neck metallic green, back bronze, upper tail-coverts forming an enormously lengthened train, green with numerous large ocelli, each ringed with blue and bronze; ventral plumage purplish blue; closed wings and thighs buff, the former mottled with black; flight feathers and tail cinnamon brown. Female: Head chestnut; mantle green, back brown, indistinctly mottled with buff; wing-coverts coarsely mottled with buff and black; throat and fore-neck white; breast brownish black, fringed with greenish; under parts buff.

RANGE.—India, Assam and Ceylon.

THE BIRD IN ITS WILD HOME

I CROUCHED low on a hummock of coarse, dried grass. Sprawled flat, I looked through the stems toward the half-filled lagoon in front. Ceylon junglefowl were my object, and hence it was that, instead, I saw my first Peacock. Through the ensuing months I was to learn that the oblique glance was the one that most often counts, and frequently penetrates more deeply into the lives of the wild creatures. So after a few lessons I gave up devoting a day to this or that pheasant. I merely went out with pheasants at the back of my brain, ready for anything which might appear. For as certainly as I sought junglefowl, that trip was sure to be replete with the excitement of Peacocks; and when I made a dead set for the latter, my trail was certain to cross that of the wilderness poultry.

I had left my hammock long before dawn, the darkness thinned by the light of Venus shining overhead, outglowing in intensity the silver thread which marked the crescent moon below it. No animals appeared, but deer barked close on either hand. I turned off the trail and entered an open grassy space bordering the lake, which even at this hour showed dully through the dusk, like a field of oxidized silver. The tracker grasped my arm and pointed ahead. I could just make out three objects. He whispered, "Deer." We crept silently on for a few steps, and then realized that the creatures were approaching. The coolie uttered an exclamation of fear and crouched down behind my umbrella tent-bundle. The thought that they might be buffalo, and that there were no trees near, was unnerving enough, for if they should charge blindly at the white man's scent, my pheasant-hunting would end abruptly. Then a second whisper, "Pig," and at the moment I heard a grunt, and knew a wild boar and his family were facing me. After what seemed a long wait, the two lesser silhouettes slowly retraced their steps, sniffing as they went. The old tusker champed and pawed and covered their retreat.

It was five o'clock when I was left alone at the lake edge, hidden in my turf retreat, with the green tent cloth laid over me. Almost at once the first junglefowl crowed. Then spoonbills and pelicans arrived separately; curlews; more spoonbills, and a host of flamingos flying so high that they caught the sun's rays long before the acacia scrub was alight. Two elephants moved slowly away from the lake and swung into the jungle, and to my left five axis deer came out and fought the flies on a gentle rise of ground. In my cool ambush I seemed to be in some unfenced zoological garden, so abundant and unsuspicious were the wild creatures.

Then a familiar, long-drawn-out scream reached me, and I twisted quickly enough to see a great bird with undulating feathery train glide down from a distant high tree and disappear a hundred yards away behind a ridge.

Discarding my helmet, with my luger slipped around between my shoulder-blades, my glasses buttoned into my shirt and my leather elbow-pads in position, I began to "caterpillar" along on my back trail. When, at one time or another, one has travelled long distances in this way, one learns instinctively to control his anatomy so that neither body nor limbs rise above a twelve-inch level. Here, with grass all about, this vermiform mode of progression concealed me completely except from creatures flying overhead. I had just come to realize in the last few weeks that the term vermiform was not the best to use. My progress was certainly along the ground, it was undeniably on my belly in the dust, but my stubs of forelimbs, represented by my elbows, by means of which I rowed myself along, were, zoologically, not exactly worm-like. They were more salamandrine. This I thought until I saw the little mud-skippers, those small pop-eyed fish known as gobies, which leave their element and on bent pectoral fins hitch themselves over the slithery mud. Then, and not until then, did I realize that, from a locomotory point of view, I had reverted to the gobies; my ambulatory atavism was in the direction of a mud-skipper. But an ornithologist in the field knows no dignity, no precedent. When a level piece of ground is to be crossed, and crossed without being observed, one's only concern should be for a path free from sharp-pointed stones, thorns and fire-ants. Then it is a stalk de luxe. And if the path is not so free, why, it is still to be traversed. And if the approach is made well, with the patience of a creeping feline, the reward is sure to be over-generous, out of all proportion to the bodily discomfort.

From observation on a former trip I knew that beyond the first bit of rolling ground was a depression with a stagnant slough in the centre. I writhed and levered my way up the sandy slope, and then worked through a dense grass clump, peered out and saw nothing—at least my first glance showed no life except one of the omnipresent pairs of bee-eaters. Then a dead, angular, wooden stub, protruding from the grass, swayed, and I knew it for the head and neck of a Peacock, a real wild bird of Pan, the first I had ever seen outside of civilized surroundings. The bird was standing drawn up to its greatest height, and its attention was centred, not on me, but on the ground close to its feet. Its neck was so stretched out that it appeared attenuated to the breaking point; the head was bent forward in a position which a taxidermist would have been ashamed to imitate; the body was partly hidden by the grass. Suddenly it gave a leap into the air, a single spring and flick of wing sending it up six feet and over in a half-circle, the long train fanning out into a feathery mist. It alighted and slowly approached the spot of interest again, and after a period of intense gazing, it repeated the manœuvre. This time I saw something brown shoot quickly across an opening and then, whatever it was, the Peacock seemed to trail it for several yards and bring it to bay again. This was in an open spot, clear of turf. Slowly, with infinite caution, I got my glasses up and focused. First a blur of indefinite haze; then the brown turf in the distance coming into focus; then the glorious breast of the Peacock, and the very hazel of its eye, as distinct as though it were within reach of my arm. And finally, on the ground, a tiny vibrating point, of which I could make nothing. My eye followed it to what looked like a little mound of mottled clay, and a Russell's viper suddenly stood out clear, snapping into optical recognition, as one's toy puzzle picture of the six inverted cubes shift and change at a glance, appearing erect or inverted at the whim of the mental shutter. The viper was of the earth, earthy in colour, and only its tail-tip quivering with emotion betrayed it.

For ten minutes more this strange one-sided encounter continued, the Peacock apparently moved only by curiosity, keeping well beyond the danger line, but making the serpent strike again and again, and then following it when it attempted to escape. Either the snake found its hole or the bird tired, for at last, when some distance away, it left its amusement, went to the edge of the water and drank deep, lifting its head a score of times before it was satisfied. It then called loudly, familiarly, with the same cry, the same mournful intonation that one hears at home from birds which have known no real freedom for generations. It picked here and there among the sedges at the water's edge, now and then finding a bit of food which occupied it for some time and required much pounding and pecking before being swallowed.

The sun beat down cruelly, and I knew that a few minutes more of exposure to such direct heat without a pith helmet would be bad for any newly-arrived sahib, so I rose to my feet and watched the bird. It seemed almost to sense my impulse, so quickly did it turn, being on the run before I had reached my knees. It traversed the knolls of coarse grass with great bounds, gaining impetus and speed at each step, until with wings beating rapidly, it rose, and with undulating feathers, glistening in the sun, swept swiftly over the acacias and out of sight, the closest approximation in appearance to a monoplane in nature. I looked about; the bee-eaters and I were alone.

GENERAL DISTRIBUTION

This bird is well named Indian Peafowl, for India is its real home. Beyond the limits of this country it extends to Assam on the east and to the island of Ceylon on the south. Its distribution within these limits is governed by its peculiar mental character. Like the red junglefowl and rock pigeon, if unmolested, it becomes of its own accord almost domesticated. In some places it is found in dense damp jungle, and again it is at home in semi-arid regions, always, however, near water. This will explain certain features in the distribution of this species.

In Ceylon it is essentially an inhabitant of the dry coastal districts, being perhaps most abundant in the Southern Province, from Hambantotta eastwards. It may be said to be generally distributed throughout the island, except in the hills, being wholly absent from the Kandy-Nuwara Eliya district, and from the western provinces from Puttalam south past Colombo to some distance beyond Galle.

The Peacock has been established in many places, both within the general limits of its range and elsewhere. In the Andamans, on Ross Island off Port Blair, in five years they have greatly increased in numbers, and when suddenly alarmed fill the air with their cries. But although many have been captured and turned loose on the larger island, they do not thrive, and soon disappear. On St. Helena Peafowl formerly existed in such large numbers that they wrought great havoc in the gardens. So the farmers began systematically to kill them off, and succeeded eventually in exterminating them. These birds have been successfully established in Hungary, where they survive the winters without harm, and increase regularly, raising, however, only two or three in a brood. In America and elsewhere Peafowl are kept on estates, breeding in orchards and bushy fields, and living in a condition of semi-captivity.

GENERAL ACCOUNT

Within certain limits the Peafowl is the most sedentary of birds. Unusual drought will, of course, force them to travel to new drinking places, and in the breeding season they retire to deeper, denser jungle than they ordinarily inhabit. But aside from such movements their lives are very regular, and their daily wanderings are only of sufficient extent to enable them to find food and water. When any given food supply is ensured, their visits to it are as regular as those to a drinking place, or their evening return to a favourite roost. Unless I especially indicate otherwise, all my statements in regard to this species apply to the birds which are truly feral and unprotected. For where mankind never kills or annoys them, the birds, while at full liberty, alter their habits to such an extent that an account devoted to them would give a very imperfect idea of the real life-history of the truly feral bird. So when we see a host of wild Peafowl coming regularly at evening to a temple compound to be fed, we can hardly accept such regularity as characteristic of the species, until we know that in birds of the deep jungle the same love of routine holds good.

When certain fruits were abundant in southern Ceylon, evening after evening I have visited a narrow water-worn gorge, certain of finding six birds there: a full-grown male feeding with three hens and a half-grown bird, while a short distance away a second-year cock fed by himself. In localization the argus, of course, leads all the pheasants, owing to its specialized dancing-ground; but the kaleege and the Peafowl certainly excel in this matter of daily regularity of habit. At least in two distinct instances which I observed they even had favourite places for spending the heat of the day, apart both from their feeding-ground and their roost. All this regularity, however, on the part of the jungle birds is dependent upon their being undisturbed. If one comes suddenly upon them when feeding and thoroughly frightens them, several days may elapse before they will return to that spot.

The Peafowl is a bird of the low, hot country, seldom found at any great height

CEYLON HOME OF THE PEAFOWL

In the open, grassy country of south Ceylon, with half-filled lagoons here and there, only a few miles within from the ford used by bullock carts, I saw my first wild peacock, and found its nest. Early one morning, the scope of the upper photograph, I saw peafowl, wild pig, spoonbills, pelicans, flamingoes, elephants and axis deer, and heard barking deer and junglefowl. Amid such a natural zoological park these splendid birds made their home.

CEYLON HOME OF THE PEAFOWL

above sea-level. Strangely enough, it is unusually amenable to acclimatization in even cold temperate regions, and can resist long periods of frost and live unprotected throughout severe, snowy winters without showing any signs of discomfort. It is by nature truly tropical, and I have seen it walking about unconcernedly in the sun with the thermometer 147° Fahrenheit.

There is a record of its occurrence at Cook's Hill, on the north-east slope of the Nilgiris, at an elevation of five thousand feet. But this is well to the south, and a still more extreme elevation, relatively speaking, is at Bilaspur, west of Simla, where it has been shot at four thousand feet. I could find no reliable records of absolutely wild birds higher than the first-mentioned height. In Ceylon, a Peacock at twenty-five hundred feet is extremely rare, and in the Himalayas, such as Gahrwal, Nepal and Darjeeling, though it is abundant throughout the terai foothills and penetrates well up the river valleys, two thousand feet is usually the limit of its range. In a résumé, such as this, a single extreme record may give a false impression to the whole general summary, and I would call attention to the fact that all the above figures represent the haunts of a very small fraction—almost negligible—of the wild Peafowl, and the vast body of the species spends its life but little above the level of the sea.

Within the limits of its range it is pretty regularly distributed, and is found inhabiting regions of widely different physical character. Its favourite haunt is jungle in more or less broken country, with at least occasionally high trees, with water and cultivation in the vicinity. On the other hand, Peafowl thrive in many rocky and semi-arid districts, and in semi-desert regions where the only vegetation is cactus, acacias and euphorbias. Aside from the fact that their range has been greatly extended by artificial introduction, these birds take instant advantage of favourable changes initiated by man. Hume says that the canals of Upper India, with their grass and tree-clad banks, are favourite abiding-places of these birds. In a day's journey along a newly-opened-out canal, hardly a dozen birds would be seen. Ten years later, if one passed along the same place, the canal now being lined with grass and well-grown trees, several scores of Peafowl would be visible in every three-mile stretch between two bridges.

Indian Peafowl are not as sedentary as their green-necked brethren, but even they seem to wander but little, and when protected by general religious scruples, the same individuals, marked in some unmistakable way, have been known to haunt a temple compound for several decades. The females seem to wander more than the males, this being especially true after the breeding season, when the young birds require an abundance and variety of food. Away from the haunts of man, while there is never any migration due to temperature, there is occasionally a general shifting and concentration incident upon the ripening of certain edible fruits. And even where they come for food to the vicinity of villages and temples, I have heard more than once of this habit of migration. In one case where about one hundred birds were accustomed to come out of the jungle in late afternoon and take the food thrown out for them, when a small, soft, yellow fruit came into season the number of the birds would for a few weeks be reduced to a quarter. When the others returned, it was said they were excessively fat, and after this it was not uncommon to find the feathers of these birds here and there in the jungle, quite plain evidence that their obesity had caused them to fall victims to their enemies. Another cause for seasonal shifting is a year of unusual drought—only too common a phenomenon in this thirsty land. At such a time the birds may disappear altogether from a given district, retiring deep into the jungle, or concentrating along the shrunken rivers or the stagnant pools. It is interesting to note, however, that they seem particularly able to withstand any reasonable climatic vicissitudes, and in a dry year they are the last to give way, long after the other common birds and the mammals of the country have left for moister regions.

As regards abundance, the question of mankind's feeling toward these birds introduces, of course, a very unnatural factor. Where held sacred there may be thousands within a comparatively narrow area. In the real jungle, where they have to take their chance with the other wild creatures, they appear to be relatively more abundant than other birds of their family. This is due to the fact that they are not skulking birds, but their desire is to detect approaching danger as soon as possible and to escape by flight as often as by fleetness of foot. So that in passing through a given bit of jungle, inhabited, let us say, by equal numbers of peafowl, junglefowl and pheasants, one is made aware, both by sight and ear, of many more of the former than of the two latter, and the wrong impression is gained that the Peafowl are by far the most abundant species.

Peafowl are gregarious birds, and seem to enjoy one another's companionship. Throughout much of the year even the full-plumaged adult males do not object to each other's company, and only at the approach of the breeding season do they draw apart with their harems. Even the voluntary domesticity to which they yield themselves seems to have a degenerating effect on their relations with each other, and the males seem to show little of the fierce competition which certainly holds true of the isolated individuals away from man's presence and protection.

Nature has endowed the Peacock with a voice as unmusical as it is powerful, and the bird takes as much pleasure in exercising its vocal chords as it does in showing off its wonderful train. While it is especially noisy during the season of courtship, yet not a week of the year passes without the bird giving voice. Little excuse is required. A peal of thunder, the report of a gun, the noise of a falling tree is often sufficient to set calling every bird within hearing. I have known the call to be uttered while roosting in a high tree, while lying prone upon the ground, and a brave attempt made at uttering it when the bird was in full flight. When walking quietly through a deep, dense jungle, with no sound of wind or insect audible, it is most startling to hear this piercing, raucous cry ring out close at hand. When a flock of birds has been scattered, especially late in the afternoon, there ensues a great calling until all are gathered together again.

The cry is almost indescribable. It has a crescendo, wailing quality which can be mistaken for the note of no other bird. The note of alarm, on being suddenly flushed, is a loud *kok-kok-kok-kok!* This is also uttered, although less shrilly, at the commencement of the long upward flight at evening into the roosting tree. The call of the Peahen is not as loud, but quite as raucous. The young birds have a soft chirp, and the warning and content notes of the mother are devoid of all harshness.

Peafowl are able to rise rapidly and at a remarkably sharp angle from the place where they start. The hens can sustain themselves for a number of flights of several hundred yards each, but the cocks when burdened with a train of full length are less successful, and it is not at all uncommon, when the birds are cornered away from dense jungle, for a number of natives to run down a Peacock and capture it with their hands. The habit of the cocks in keeping to their roosts until the dew is dried up shows that they realize what a handicap is their drenched plumage.

Their usual gait is too well known to describe. Suffice it to say, that however conscious the cock may be when showing off, much of his ridiculous apparent swagger and stiff-legged strut is due to the mere mechanical effort to keep balanced. In a high wind, these pseudo feelings with which he is credited are correspondingly increased.

DAILY ROUND OF LIFE

The Indian Peafowl is omnivorous. This is to be expected in a bird whose haunts include such diversified areas. It is by preponderance of evidence a vegetarian, and the larger part of any one bird's crop will usually be found to be vegetable, either grain of several kinds, or tender grass, or bamboo shoots, and flower petals if the birds inhabit the plains or jungle borders. In the forest itself various berries and small fruits are eaten, favourites being the wild fig (*Covillio glomerata*) and the korinda (*Carissa carandas*). Few types of animal life, if small enough, escape them at one time or another: molluscs, insects and grubs of all kinds, worms, small lizards, frogs and even snakes. In some places termites or white ants form a very important article of diet, as they do with other pheasants.

Most of the Peafowl I secured in south Ceylon were taken in early morning, when the crops were still empty, but a few were shot in the evening. One of these had both the crop and gizzard crammed with panicles of grass seeds. A second had in its crop two hundred pea-like berry-pods, a number of large purple berries, eight or ten large heart-shaped leaves swallowed whole, a few grass seeds and a single walking-stick insect, two inches in length. The berries of this region which formed the favourite food of the Peafowl were known as Uguressa and Walpala.

Their fondness for berries, fruit, grain and sprouting buds makes them very destructive to the natives' cultivated fields and to young plantations. In some places the farmer has a hard time of it trying to keep his crops from both the sacred Peafowl and the monkeys. He has to resort to most ingenious devices: scare-crows, strings of glistening, jangling tin, or to keep men and women constantly on the watch to frighten off the marauders.

I have mentioned the item of snakes in the diet of the Peafowl. There are several authentic instances of small snakes being taken from the crops of these birds, but, more than this, there is a fixed belief in all the countries which the Peafowl inhabit that it is the inevitable enemy of snakes great and small. I shall speak of this more in detail on a later page.

The Peafowl feeds, I believe, wholly on the ground. The fruits, berries and petals are those which have fallen, and the leaves and grain are plucked from low plants. These birds, especially the females, scratch vigorously and unearth grubs, worms and the nesting galleries of termites. In this latter work I have seen them use the strong bill to help pick away the baked earth.

Peafowl invariably choose to roost among the branches of high, isolated trees. They evidently fear no danger from above, and they find such a position safe from the four-footed nocturnal creatures which are unable to climb the great, smooth-barked trunks of these trees. This choice of position characterizes much of their wild life; the total disregard of being seen, always provided that they themselves have a point of view where their remarkably keen sight will give them a good opportunity of perceiving the danger first. All the habits of life of the Peacock refute the idea of any protective value in their blue and green plumage. However easy it may be to make a stuffed Peacock melt into his surroundings among green foliage and spots of blue sky, the fact remains that the wild live bird never takes a chance of escaping detection by such a ruse, but gets up and flies off to a safe distance or height at once. The only instance of mimicry of which I have ever heard was told me by an Englishman living at Uva, Ceylon. Each evening he walked past a certain tall tree in the jungle, and never failed to see a Peacock roosting on the same branch. At last one moonlight night he went out and fired at the supposed bird, and brought down the stub of a deformed branch which had deceived him.

The cock roosts alone or with his harem of one to five females. Before dusk he makes his way to the vicinity of the tree, not under it, however, and after prolonged listening and looking in all directions, and sometimes after several crouching, false starts, he springs from the ground and beats heavily, but with remarkable rapidity, upward at an acute angle to the lofty branch upon which he will spend the night. The effort which this incurs is indicated by the apparently involuntary abrupt call to which he often gives voice, analogous perhaps to the audible exhalation of a workman wielding a heavy sledge. At intervals of a few minutes the hens follow, flying more easily. Then succeeds another period of restlessness and statuesque listening, before the birds settle down close together, all facing one way. The quick tropical night has usually closed down by this time, but on two or three occasions in south Ceylon I have been able to watch, through my glasses, all the details of settling to rest. Two evenings in succession were very different in character. On the first a strong wind was blowing directly across the branch, and all the birds went to roost facing it. The following evening was calm and breathless, and all faced in the opposite direction. From one such roosting tree of a cock and three hens, two hens were shot early one morning. For eight days it was unoccupied, but on the ninth the cock returned with two hens, showing the strong attachment which these birds have for a favourite roost. One of the hens was presumably the remaining one of his old family, while the second must have been a new addition.

The roosting tree is usually bare of branches for most of its height, but with a considerable number near the summit. The perch chosen is on one of the lower of these, and is almost invariably devoid of foliage, thus providing a clear outlook in all directions. I have known of more than one tree which was dead, without leaves and with only one or two gnarly, bare branches, one of which was the nightly roost, exposed to all the rains and winds of heaven.

The birds usually descend rather early, before actual sunrise, the cock leading and the hens following at once, all scaling gracefully in a gentle curve to the ground some distance away. After a rain or a heavy dew the Peafowl remain on their perch until the sun is well up and their plumage and the jungle has been partly dried. At such times they rise, stretch legs and wings and shake and preen their feathers, the cock standing with drooping train and trailing wings. I have seen him spread his train out laterally, lying flat against the branch, any further spreading being, of course, out of the question in a situation requiring such nicety of balance. I have seen him walk up and down the branch, and once an athletic hen actually leaped over the cock and walked along the branch until she reached a spot where it intersected another, on which she climbed. All seem to wait until the cock is ready to descend. He occasionally calls, and I have even heard him give his loud cry after he has gone to roost in the early dusk. In the breeding season he begins calling as soon as he has descended, and at such times he interrupts his feeding every few minutes to stand erect and send forth his challenge.

Food and drink are the things of first importance in early morning, and the birds go at once to some known source, either where berries or fruits have fallen during the night, or wilted flowers have dropped their petals, or to some long-suffering colony of white ants, where strenuous scratching and pecking is sure to reveal an abundance of luscious larvæ. The birds may or may not go to drink immediately after descending from their roost. This is certainly not the case when there has been rain, but I have known a small flock of Peafowl to make their way at once to a jungle stream and drink long and deeply. When making their way with such a definite object in view, the two separate times I have observed them, while myself hidden from view, the cock has seemed to loiter in the rear, the hens straggling ahead in a more or less compact body, pursuing an insect now and then, or picking up a leaf, while the cock, at least while within my sight, scarcely ever ceased his scrutiny of the surrounding jungle.

Peafowl feed almost invariably in open places, occasionally in open jungle, but, as far as I could discover, never in dense undergrowth or among thick growth of trees or bamboo. This is unquestionably correlated with their method of escape by flight and desire to be free to discern the danger at the earliest possible moment. When the danger is only suspected, the birds will always make their way quietly off, and perhaps halt a short distance away, on the alert to see if their suspicions are well founded. When once thus put on their guard, all further chance of approach is impossible, and if again disturbed, they usually take at once to flight.

As the heat of the day increases the Peafowl do one of two things: they usually mount to some low bare bough, perhaps only a few feet above the ground, but shaded by foliage overhead, or they gather together in some partly open patch of jungle. In the first instance both cock and hens may perch, some of the birds apparently sleeping, others preening their plumage, or the cock alone may take a point of vantage and keep watch over the hens on the ground beneath. Thus quietly the heat of midday is passed. Once, cached on a sitting branch, concealed by a screen of leaves, I watched two hens taking a dust bath. They had hollowed out cavities in which they were half hidden, and were flipping clouds of dust over their bodies with great sweeps of one wing. The heat was intense and their beaks were wide open, and after fifteen minutes both birds arose, shook themselves and retreated to the shade of a nearby bush, where violent shakings and preenings went on as long as I watched.

As regards friends, or any friendly associations with other creatures of the jungle, the Peacock, like the argus, is sufficient unto himself. He asks no help and keeps aloof, his supposed association with the tiger being probably based wholly upon the mutual choice of similar environments. On the other hand, there may be truth in this to the extent that the quick sight and consequent perception of danger by the Peafowl and its simultaneous warning cry, giving the alarm to all the creatures of the jungle, might be of tremendous advantage to the great cats. They, dependent on scent, and confined to the floor stratum of the jungle, would be enabled to slink off and escape detection by hunters and their beaters, who otherwise would be able at least to locate the animals. Unless surprised in jungle so dense that escape by flight is impossible, there is little slinking on the part of the Peacock. His object, after having sensed danger, is to get up to a point of vantage, where he can watch the further approach of the suspicious object, diagnoses it from this safe distance, and lay his subsequent course accordingly.

Unlike any other wild pheasant or junglefowl, the Peacock can boast friendships with mankind at least in certain parts of his haunts. And he responds at once, both taking an ungentlemanly advantage of this immunity in working occasional havoc with fields of grain, but coming in flocks of many scores to be fed, and fearlessly nesting and rearing young in close proximity to the native villages. I shall go into this in greater detail under the division of Relation to Mankind.

The Peacock is well armed with sharp spurs, and in spite of the great handicap of feathers, it is well able to defend itself against the commoner dangers of the jungle. Few of the smaller carnivorous mammals and birds of prey are able to face and overpower it. Jackals and martens probably take toll now and then, and the great hawk eagles certainly kill them. These latter strike the Peafowl when they are in the open, and hence it is that when feeding in open spaces, the birds will always keep glancing upward. When one of these fierce birds is seen, the Peafowl make one sudden rush to cover, reversing for once their method of escape.

In many parts of the East the natives firmly believe that the slow loris is one of the most inveterate foes of Peafowl. It is thought that through all the night this little creature searches slowly, remorselessly, for his victim, and when found he creeps carefully up the back of the sleeping bird, and twining his skinny arms about its neck, clings on until he has bitten into and eaten the brain. Leopards and tigers doubtless keep the ranks of these birds thinned to a certain proportion, and are probably the most dreaded of all their enemies, disregarding the hostile humans who sadly decimate the ranks of these beautiful creatures.

Again we may compare the argus and the Peacock; the one handicapped by a localized dancing-place and wings whose efficiency is impaired by ornamentation; the other cumbered with a great mass of plumage. Both also are compensated by unusually keen senses of sight and hearing and ability to escape, the argus usually on foot, the Peacock *au vol.*

Mentally, the Peafowl deserves high rank among birds, not, however, for its keen senses, a mistake which many authors make in judging of the relative mentality of various animals. Nothing could be more keen than the sense of smell of moths; while the tactile and auditory senses are wonderfully developed in organisms still lower in the scale of life. But in adaptability we may class the Peafowl with the elephant. Among all the pheasants, in a wild state there is no more wary, no tamer bird than this, depending on whether man treats him as a game-bird or an object sacred to the gods.

NESTING GROUND AND ENTRANCE TO PEAFOWL'S NEST

A PEAHEN's nest in south Ceylon was guarded by dangerous water buffalo, which fed slowly over the grassy plains, always accompanied by a ring of white herons or cattle egrets.

The nest itself was well hidden in a tangle of underbrush, surrounded by coarse, high grass, over which the peahen leaped when leaving or returning to her nest, the barrier being thus unbroken by any worn track which might reveal the frequent passage of the parent bird.

NESTING GROUND AND ENTRANCE TO PEAFOWL'S NEST

And correlated with this, when we do keep him in captivity we find that, like the cat, he has caste; he walks alone; he accepts food and shelter, and in return remains in the vicinity and displays his wonderful plumage. But he never degenerates, never becomes a mere commercialized feathered thing, like his distant relatives—the poultry of the barn-yard. His position in the scale of domestic creatures is equal to the cat; somewhat ahead of the turkey. An instance of the remarkable sense of sight in birds even when reared in captivity was brought to my notice in Ceylon. Many of the Singhalese are expert stone-throwers. I have seen a man knock over one chicken after another, but they are never able thus to kill a young Peafowl. When these are hatched under a domestic hen, they become very wild after a few months, and must then be caught or they will run off. No matter how swiftly or accurately a stone is hurled at them, they dodge still more quickly.

HOME LIFE

A brief account of my first wild Indian Peafowl's nest will give not only a good idea of the general environment, but also emphasize the shrewd mentality of this species. One day in south Ceylon I started out at daybreak in a bullock cart. Civet cats and junglefowl dashed across the road ahead, and the crows of the latter sounded in all directions as we went along. After a two-hour ride in the springless cart, I came within sight of a ford on the River Kirinda. As we halted at the top of the bank several families of wandaroo monkeys came close and watched us intently. The trees overhead were filled with brahminy kites, and bee-eaters dashed past in pairs. With a rush we descended the bank, splashed through the river and pulled up the opposite slope. Here I outspanned and breakfasted, and before I had finished, secured my first Peahen, a bird which had finished nesting.

A hot walk of two miles lay between me and the Peahen's nest, mostly through jungle and paddy-fields. I climbed fences and passed most elaborate apparatus for jangling kerosene tins and wriggling scarecrows. Slender poles led lines to a shelter where a boy sat and pulled the cords—the tins at night, the scarecrows by day—to keep Peafowl, deer and elephants from the grain. Slippery causeways covered with beautiful flowers divided the paddy-swamps. Dense jungle alternated with these fields, tangles of lianas, tall trees and palms. Along the margins iridescent kingfishers and sunbirds darted about. In one reed-grown field a colony of a hundred or more golden-capped weavers were in the height of their breeding season. In the distance water buffaloes fed stolidly, attended by a white fringe of egrets. Twice I saw fresh elephant spoor.

At last I entered the field where I had located the nest. Fifty yards away from the edge of the jungle was a small clump of dense brush, about nine feet high and twelve in diameter. At one edge of this, but well concealed within the cover, was the nest, which contained a single egg. Pushing aside a tall growth of rushes, with spiky heads several inches across, I could see the egg. There was no especial nesting material, only a depression in the ground, a foot across and two inches deep in the centre, with a few feathers and the dried leaves, twigs and other debris of the ground as lining. The opening through which the bird entered was twelve or eighteen inches above the ground and yet well below the top of the rushes, so that the Peahen must have always entered and left with a spring, making a clean leap over the dense growth of undisturbed rushes which guarded the only entrance to the nest.

This bird was indeed wary, and although a boy had constantly mounted guard over the field in a hut not far away, she had never been detected. She had deliberately chosen this site in the centre of a marshy paddy-field not far from constant human supervision. This eliminated all danger of civet cats and other jungle vermin. She leaped over the rushes at the entrance of her nest, thus leaving the nest wholly invisible and impenetrable to a creature of low stature. She then turned sharply aside from the clump of tall rushes, and pushing along for several yards beneath the grass tops, through a tunnel shaped by the frequent pressure of her body, she entered a paddy-field trench partly filled with water. Along this, as her tracks plainly showed, she walked for about forty yards, then entered a second clump of dense growth and passed through this before leaving it and running or flying to the edge of the jungle fifty yards or more away.

The nest was a late one, possibly a second one, the first perhaps having been elsewhere and destroyed. The egg was fresh and stained from her feathers bedraggled in the muddy trench. Had I not trod on the edge of the clump by accident a few days before and flushed the bird I should never have discovered the nest.

The breeding season of the Peafowl varies considerably with the latitude. In northern India it breeds during the rains, and eggs have been recorded from June to September, with August marking the height both of the rains and the breeding. In Ceylon the birds breed from September to December. Eggs have been recorded from Mysore in April, but this is unusually early. In the north the cock begins to moult his train in September, and it is not full grown again until March or April.

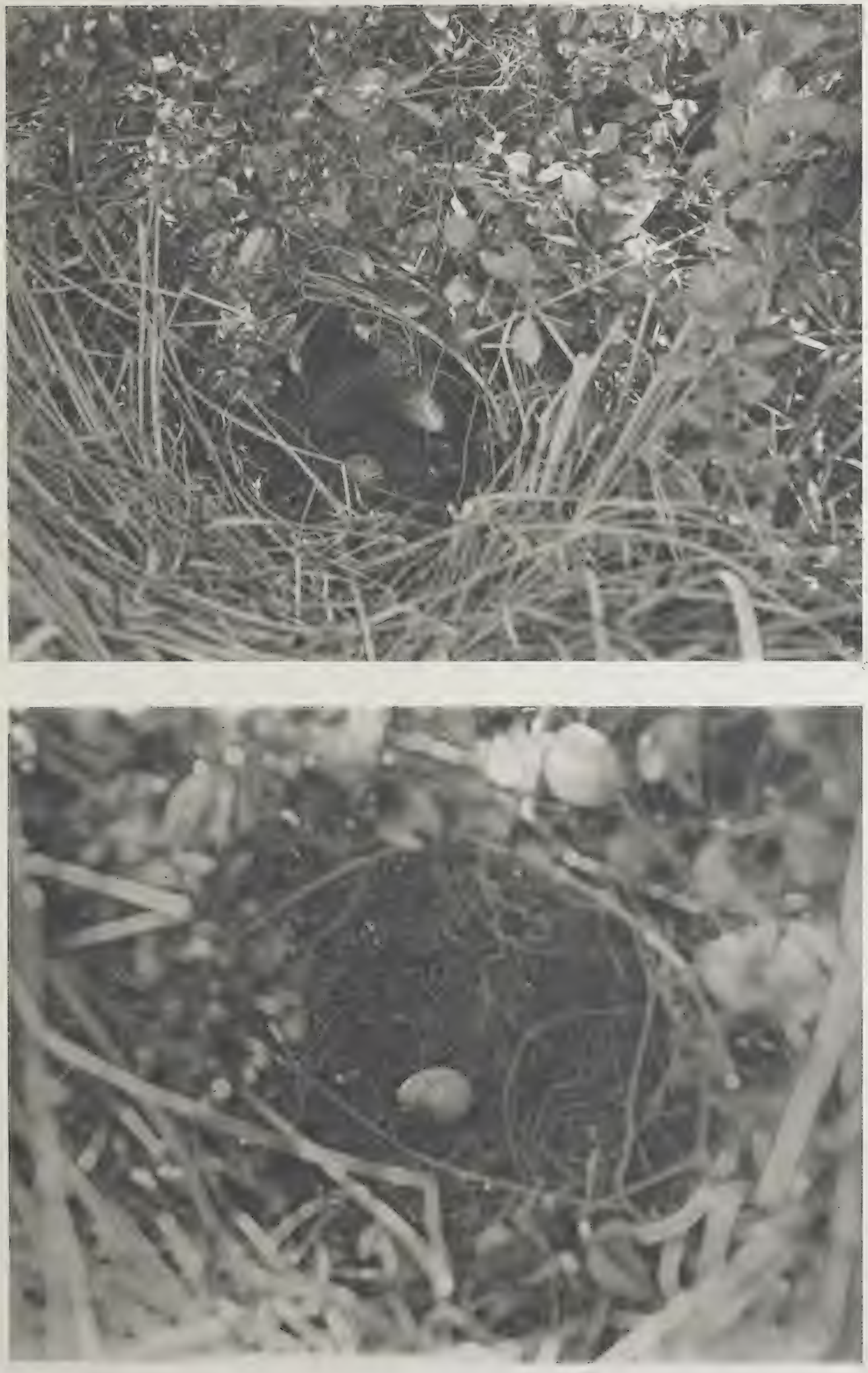
A month or more after this he begins calling regularly. Those which secure a harem of several hens practically cease calling, or at least utter their cry only at long intervals. But young cocks of two years of age are most persistent and apparently less successful. Whether or not the hens are able to detect the evidence of immaturity in their voices, I cannot say, but I have records of three separate individuals of this age, all of which I eventually secured and which bore out the above assertion. Not only do these and other ardent individuals call persistently in the morning and evening, but their loud piercing wail can be heard at all hours, at midnight on moonlight nights, and even in the scorching heat of midday.

Once only have I seen a wild Peacock in display, and that for but a moment before my presence was detected. It was in early morning and there were two hens present. This exhibition is so common a sight among captive birds that our appreciation of its beauty and interest is liable to suffer. While it is far from being the most complex courtship among the gallinaceous birds, yet in variety of effort and in concentration of effect it has no equal. Simultaneously the eye of the hen is engaged, by both colour and movement, and her ear by both vocal and instrumental music. The enormously elongated and multiplied tail-coverts are erected in a glorious curve, backed and steadied by the erect and partly spread tail of dull normal feathers. This accomplished, the bird walks slowly—or "struts," as the usual saying is—before the hen. When he thinks a propitious moment has arrived he executes the climax, which is suddenly to rush forward, and with a sudden shiver of his whole body to rustle his tail quills

NEST AND EGG OF PEAFOWL IN SOUTHERN CEYLON

The nest of a wild peahen is merely a depression worn by the weight of the bird in whatever materia lies upon the chosen spot. A few feathers may become loosened from the breast of the sitting bird, and she may break off any twigs or stems which interfere with her freedom of movement, but no outside material is brought or added to the simple home.

As the photograph shows, the first egg of the set had been laid; the full complement would be from four to eight. The eggs are white, but the coarse, pitted surface results in their soon becoming stained and brown in colour.



NEST AND EGG OF PEAFOWL IN SOUTHERN CEYLON.

together, producing a soft, penetrating sound like the patter of rain on dried leaves. This transmits a quivering to the entire train, giving a fleeting but beautiful effect, especially to the loose-barbed feathers along the margin. At the same time he leaves no doubt of his presence and intentions by emitting a sudden loud scream. At the height of the courtship season the approach to the hen is often made by walking backward, the bird turning only at the last moment, and thus flashing all its colours and patterns at once, in sharp contrast to the sombre-hued rear view.

In spite of all this, the hen usually goes on feeding, utterly unconscious, to our eyes, of the herculean efforts being exerted for her benefit. But an impression is being made, none the less, subconsciously at least, and in time she will yield, and the destiny of this handicap of feather burden, and all the elaborate muscular mechanism and correlation of the organs of the body to produce the *tout ensemble*, will have been fulfilled. In the days to come the beautiful ocellated feathers will fall one by one, and months will be occupied in the slow growth of fresh plumes in preparation for the succeeding season of courtship.

In general effect the display of the Peacock is comparable rather with the wing-spreading of the argus than with the courtship of other pheasants. The most common error is to regard the eyed feathers as the actual tail, whereas they are altogether tail-coverts and lower back feathers. A bird like the Impeyan, which erects and spreads its tail, presents its body and wings to an anterior view. But the train of the Peacock when expanded is, in general position, like an enormous ruff about the lower neck. The real tail is erected at right angles to the back, forcing the coverts into a perfectly erect position. These in turn raise the feathers of the upper back, which form a metallic-green shield or base, the background for the shining blue neck and the crested head. The lateral tail-coverts extend out horizontally and even downward, trailing the ground, fitting closely against the body, which is inclined forward, and hiding the wings. These organs have been forced from their usual position and hang drooping, half-spread, at the sides. The secondaries remain closely folded, but the primaries hang loosely and aid at times in the rustling of quills. The actual erection seems to be brought about chiefly by a sudden effort of the tail, which is thrown up, carrying with it the train. The bird then braces itself and gives a long, quivering shake, which spreads the train and settles the plumage into place in the new position.

It will hardly be denied that the chief *raison d'être* of the train is the effect produced on the Peahen. But it has come to serve other requirements, and seems to provide an outlet for a number of emotions, some apparent, others obscure. Cock birds, before they begin to fight, will often erect their trains and walk about one another, although when the first actual threat is made these ornaments are folded away as compactly as possible, so as not to interfere with active movement. Hens with their chicks erect their tails, although the train is wholly lacking, and then rush forward at any foe which may threaten their brood. The chicks themselves, with scarce-grown juvenile tail, will raise this diminutive fan and imitate the fighting tactics of their elders when only a few weeks old.

It is also true that the cock birds will very often display to a crowd of people, with no hen about, and however we, as scientists, desire to eliminate all humanizing of the habits of birds, it is difficult altogether to refute the common verdict, that the Peacock is vain and consciously proud of its plumage, and that it derives pleasure from the gaze of admiring throngs. In zoological parks these birds certainly never display as often or for as long-continued periods as when numbers of people are present. Under such conditions I have known birds, scores of times, to display for a half-hour at a time with no hen in sight, turning around and showing their beauties in all directions. Appearances certainly favour the opinion of the layman.

I saw no actual fighting among wild Peacocks, although more than once I observed one cock pursuing another. Once in Ceylon two adults were thus occupied, and near Agra a full-plumaged bird ran a young male almost into me as I turned a sharp corner around a jungle-covered ruin. There is no doubt about severe battles taking place, however, judging from the circumstantial evidence of sturdy legs and long sharp spurs, and the actual evidence of fierce encounters between captive birds. As I have said, these are usually preceded by a display on the part of both birds, but sooner or later one loses patience and makes a rush, and there ensues a pandemonium of feathers which would delight the heart of a futurist artist. The birds strike like lightning and dodge as quickly, and when both attack simultaneously they rise eight or ten feet into the air, striking downwards or sideways with one or both spurs, and pecking with the beak. It is a sight unequalled in the world of birds, the long trains fraying out, twisting and curving, following and accentuating every movement of their owners, the whole forming a blur of metallic colouring, with now and then the crested head of a bird, its eye bright with intense excitement, silhouetted clearly amid the whirling encounter. I have known feathers to fly by the dozen, and once a bird's breast was ripped partly open, but I never knew death to result. Sooner or later one bird weakens and flies off, sometimes pursued hotly by its assailant, when the battle may be renewed elsewhere.

As to sexual selection I need only repeat my belief, already expressed in the case of other species, that the Peahen exercises no conscious, æsthetic choice, but is profoundly influenced in some subconscious way by colour, movement, voice and quill-music, and especially by the persistent repetition of these phenomena. I have known of an instance where a young, short-spurred, rather unornamental cock was successful over two adult males, but in this case, although constantly driven away by one or the other older birds, he never failed to return as soon as their backs were turned, and during the time I could spare to watch he displayed his small beauties twice as often as the others, and eventually won the hen, although even after pairing he was kept on the run much of the time by his unsuccessful rivals.

It is well authenticated in a number of instances that the black-winged mutant and the white variety will sometimes completely dominate a flock of normally coloured birds by winning all the females. This would seem to support my theory that persistence of reiteration, implying supreme bodily health and vigour, is of more importance than mere perfection and conventionality of ornamental detail. The two are so often synchronous, however, that these exceptions seem only to emphasize the usual correlation of excess of vigour and perfection of plumage.

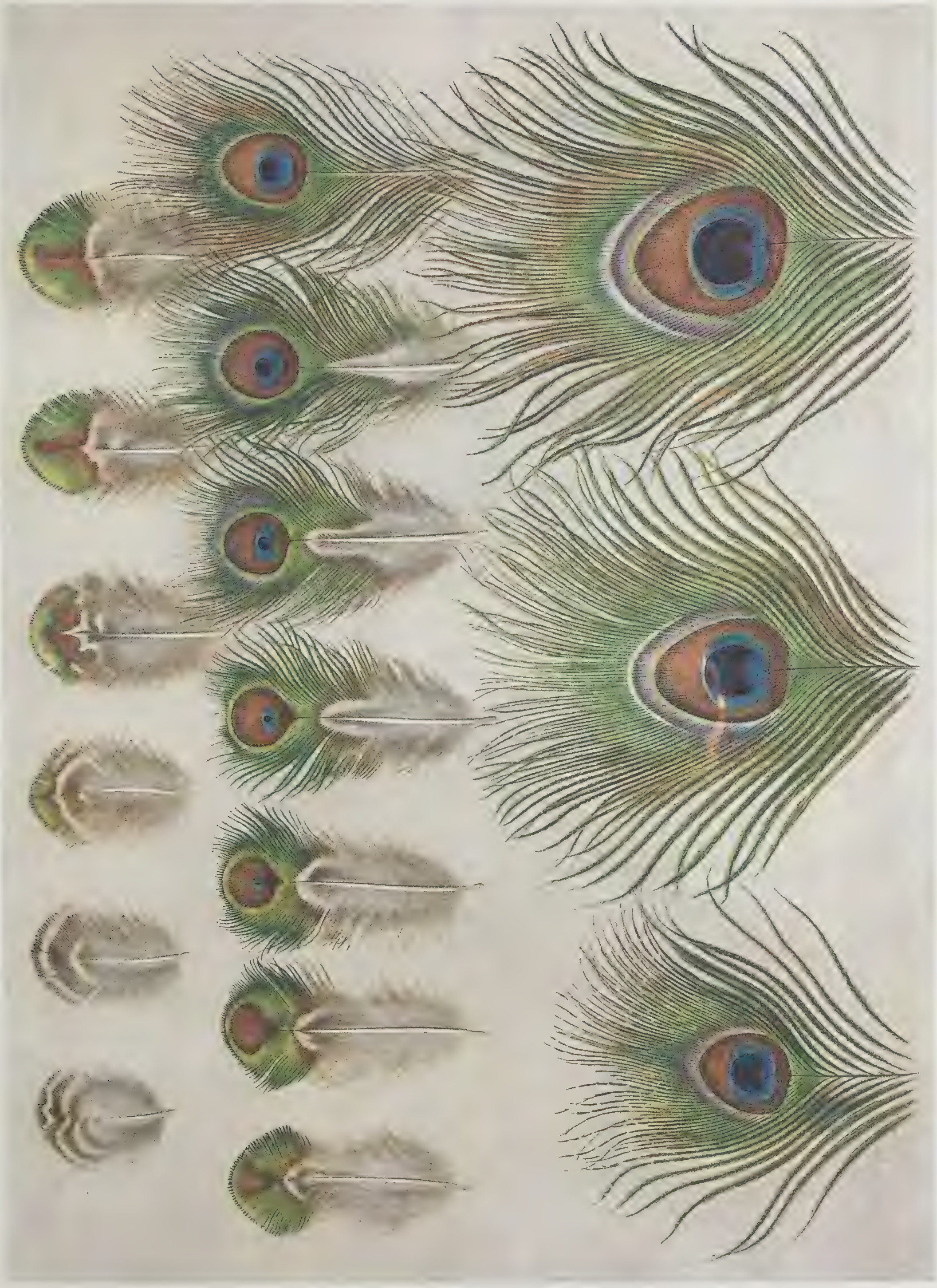
There is no doubt about the Peacock being polygamous, although in captivity not only will he occasionally be satisfied with one hen, but I have known him to condescend to accompany the chicks and pick up bits of food for them. Wild birds usually are associated with from three to five hens, and it is probable that the cock has little or

EVOLUTION OF THE EYES ON A PEACOCK'S TRAIN

THE beginnings of these marvellous ocelli must have been first visible on the plumage of some far distant ancestor of all peafowl, perhaps a hundred thousand years ago. Yet to-day in the train of an individual bird we may clearly trace their development of pattern and pigment.

Beneath one of the pale, terminal cross bands which we find on the smaller feathers, there appears (on an adjoining feather somewhat farther down the train) a blur of chestnut, which draws gradually together, and, concentrating, reaches up the shaft into a slowly expanding, terminal area of green. The chestnut is soon cut off at the bottom by the surrounding green zone, and now shows as a small monochrome fan of warm colour. In the heart of this a tiny speck of metallic blue develops and widens, and within this, in turn, a dot of black. Here we have the eye in its simplest form—shall we imagine that it corresponds to that which peafowl displayed ten thousand years ago? The change to the fully perfected eye is chiefly by enlargement, by a slight bilobing of the pupil, and by the addition of lavender, golden, copper and emerald frames.

PLATE LXXXVII.



EVOLUTION OF THE EYES ON A PEACOCK'S TRAIN.

nothing to do with the nesting or with the rearing of the young birds. But after they are well grown the family reunites. This, I believe, is true, for a cock, several hens and a few half-grown birds is not an unusual sight, and such association would be the natural result of a reunion, but hardly the acceptance into the flock of a strange cock.

The site of the nest varies almost as much as the general haunts of this widely distributed bird. The usual position is among tall, dense grass, or, as in the case which I have detailed, in a clump of shrubbery. I have never heard of a nest in thick jungle, but often the low, semi-marshy borders of ponds or small creeks are chosen. Unusual sites have been recorded, such as on the summit of the stubs of tree-trunks, the deserted nest of a vulture, the roofs of old native huts and the grass-grown tops of ruined masonry mosques. On the ground no nest is made. A hollow is sometimes scraped out and the eggs deposited on the bare clay or sand, or if the spot is in a natural depression, the debris of dead grass and leaves is allowed to remain. The site often reflects the general conditions under which the bird lives. Where it is protected by religious opinion, little care is taken to conceal the nest, and in some cases the eggs have been found deposited among short grass, and visible some distance away. But where it bears no charmed life it uses the utmost ingenuity in hiding its nesting site.

Either there is great variation in the number of eggs laid, or two hens not infrequently lay in the same nest. I believe this is far from a common occurrence, both among Peahens and peacock pheasants. Two is so universally and normally the number in the latter species, that the record of four and six is almost unique, if not indeed the joint product of two birds. Of twenty-three definite and almost an equal number of more general records concerning the number of Peafowl eggs, the majority agree on four to eight, with six as the average. Two or three authentic records of ten to fifteen, both in north and south India, have been sent to me, and these I consider double layings. I know of three instances of this occurring in domestic birds. In each case the two hens made their nest together, and sat alternately until the full complement was laid. In two of these cases the eggs numbered nine and twelve respectively. In the case of the latter number one hen sat continuously, and after several unsuccessful attempts to crowd her off, the second bird gave it up, wandered about with the cock for a week or two, and ultimately made a nest of her own, laying and incubating five eggs. By removing the eggs as laid, as many as thirty-seven have been obtained from two hens. In the wild state it is improbable that a third set is ever deposited, even when the first two are destroyed early in the season. If the first attempt is successful, there is never a second brood. The length of incubation is exactly four weeks, and any delay or advance is due to irregularity of temperature or constancy in sitting of the parent bird.

The eggs are large, with thick, strong shells, glossy but thickly pitted with minute pores. In occasional specimens this pitting is almost absent. The usual shape is a broad oval, more or less pointed at the smaller end, but they vary from an elongated oval to a very short, thick shape. The colour is usually uniform as regards any particular set, but while some are almost pure lime white, others may be a rosy buff or café au lait colour. About every fifth egg will show evidence of reddish-brown spotting, sometimes very conspicuously around the larger end.

In length they vary from 65 to 76 mm., and in breadth from 49 to 55. The average is 70 by 51 mm.

I have seen two and three young birds with an adult hen where the Peafowl were really wild. Where protected, they apparently rear larger broods, doubtless because their proximity to the native villages enables them to escape many of their jungle foes. The flight feathers are of a good size even at hatching, and develop so rapidly that the young birds are able to flutter up to a low branch when little over a week old.

RELATION TO MANKIND

"For the king had at sea a navy of Tharshish with the navy of Hiram: once in three years came the navy of Tharshish, bringing gold, and silver, ivory, and apes, and peacocks. So King Solomon exceeded all the kings of the earth for riches and for wisdom" (I KINGS X. 22, 23).

In this reference, and the corresponding one in II Chronicles ix. 21, we have perhaps the first mention of the Peacock outside of India. We next find it in the mythology of the early Greeks where the origin of its ocellated train is accredited to Hera. Argus, the son of Inachus, so called from having eyes all over his body, was appointed by Hera to watch the cow into which Io had been transformed. While thus engaged he was slain by Hermes. Hera then transferred his eyes to the tail of the Peacock.

Aristophanes and other writers mention it, but it was not widely known until after the conquests of Alexander. At the time of Pericles it was so rare that people came from great distances to see it. Elien recorded the fact that its value was about one thousand drachmes, equal to about three hundred and fifty dollars.

After Alexander introduced the Peacock into Greece, it spread rapidly, as we are told by Aristotle. This naturalist devoted several pages to the bird, stating that it lays twelve eggs. He concludes with a rather amusing paragraph: "They are pestilent things in gardens, doing a world of mischief; they also throw down the tiles and pluck off the thatch of houses; the Peacock, saith Aldrovandus, though he be a most beautiful bird to behold, yet that pleasure of the eyes is compensated with many ungrateful strokes upon the ears, which are often afflicted with the odious noise of his horrid cry, whence, by the common people in Italy, it is said to have the feathers of an angel, but the voice of a devil, and entrails of a thief. It is said (and I can easily believe it) to produce its life to an hundred years."

Pliny writes: "The same bird, having lost his tail, when the trees shed their leaves by annual change, ashamed and sorrowing seeks a hiding place, until it once more grows together with the flowers. He lives for five and twenty years, and in the third begins to show his colours. He is reported by authorities to be an animal not only proud but also ill-disposed, just as the goose is bashful."

In the Roman Empire the bird brings to mind always the platters of Peacock's tongues and brains with which Vitellius and others regaled their guests. One would think that the hard, gristly, bony affair which forms the tongue of a gallinaceous bird would be a pretty poor titbit to set before guests. It could have been hardly more satisfying than the scales on the leg of the bird.

We read that Hortensius the orator was the first Roman to kill Peacocks for his table. The first Roman breeder of these birds was Aufidius Hurcon, about the time of the last war with the pirates. That he was successful as a fancier may be judged

SACRED WILD PEAFOWL IN INDIA

UNIQUE among birds of this group is the semi-domesticity of free peafowl in many parts of India. They are considered sacred birds, and the priests often feed them near the temples, so that, at times, hundreds may be seen coming at a stated hour for the food which they know will be awaiting them.

Yet they allow no familiarity, and one beautifully plumaged cock near the ruined palace of the King of Oudh was so wary that I had to take the upper photograph in one-thousandth of a second, as the bird dashed at full speed across an open space.

WILD PEAFOWL NEAR THE KING OF OUDH'S OLD PALACE

by the income of sixty thousand sesterces, or about twenty-seven hundred dollars, which he made by this means.

In the fourteenth century the Peacock was still a very rare bird in England, France and Germany. In the Middle Ages, in France and elsewhere, the Vow of the Peacock was a recognized ritual. This was pronounced at table, and was a solemn vow to take up arms or enter upon some big enterprise. The hand was held extended above a platter on which rested a Peacock roasted in his feathers. Before carving, the knight would stand up and thus pledge himself perhaps to be the first to plant his standard upon the town they had determined to besiege. The sacramental formula was: "I vow to God, to the Virgin-saint, to the Ladies and to the Peacock," to do such and such a thing. Then each in his turn would receive a piece of the flesh. His failure to accomplish this would be considered a blot on his escutcheon. In those days Peacock plumes were widely used as ornaments on helmets and the bird was often incorporated in crests and coats-of-arms. It is said at one time to have been made into cloth, the warp being of silk and the woof of feathers, and it was probably such a coat which was sent by the Pope Paul III. to King Pepin.

The English barons of the Middle Ages, Forest tells us, gave proof of their wealth by serving a roasted Peacock at their formal banquets, surrounded by prunes, which were then very rare. The use of the eyed feathers as ornaments was gradually usurped by ostrich plumes, although Marie Antoinette made them again fashionable for a time.

Throughout all these centuries, and in fact in the literature of the Greeks, Romans, Arabs and Jews, we find nothing but commendation of the Peacock and unqualified admiration of its beauty. No adverse comments or superstitions are recorded. But at present the silly superstition of the ill-luck brought by the "evil eye" of the peacock's feather is widespread in the United States, England, France and Germany. There is no evidence of this in India or China. We have absolutely no explanation of the origin or spread of this superstition except in the following vague tale.

When God created the Peacock, the seven Deadly Sins gazed with envy at the splendid plumage of the bird and complained of the injustice of the Creator. "Verily, I have been unjust," said he, "because I have already bestowed too much on you. The Deadly Sins should be as black as Night, who covers them with her veil." And taking the yellow eye of Envy, the red eye of Murder, the green eye of Jealousy, and so on, he set them on the feathers of the Peacock and gave the bird its liberty. The bird departed, and the Sins, thus despoiled, follow ever in its track, trying in vain to recover their lost eyes. So when a man decks himself with a peacock feather, the Deadly Sins dog his steps and assail him each in its turn.

There is no need to enlarge upon this well-known theme. The superstition has an especially strong hold upon the theatre, and many a play has been broken up both by the objection of the players and the audience to the introduction of a Peacock on the stage.

Through all the later centuries we find the Peacock entering into the folk-lore of widely separated peoples. It has shared equal fame with the eagle, owl and swan, accredited not with fierceness, wisdom or purity, but given homage for its magnificent train. While this is naturally confined chiefly to Asiatic and adjacent races, yet the unusual beauty of the plumes was admired by all mankind. In the tomb of a Viking preserved at Christiania, there was found among his armour and weapons a small bundle of peacock plumes. Although more than eight centuries have passed, their metallic surfaces are still brilliant. Aside from the part it has played in the art and literature of the Chinese, the eyed feathers have long been used as an order granted as reward of merit to mandarins. In spite of the widespread notion, these indicate neither office nor rank, the nine grades of mandarins being distinguished by the colour of the button on their caps. In Russia, on the other hand, the peacock feather is often a part of the head-dress of a servant or peasant.

Besides being the bird of Juno, the early Christians adopted it as the symbol of immortality, as the phœnix stood for the resurrection. It was also a symbol of the Supreme Father, and as such was embroidered on the vestments of Catholic ecclesiastics. This idea seems to be carried out in the very name of the Peacock. In the erchaic *P*'s, one finds the earliest like an inverted J with the crook not closed—a shepherd's crook in fact, the emblem of the shepherd or father. *Pa*, according to Max Müller, means to protect or nourish, and is the root of the Greek and Latin *pater*. Hence we have *pidar* and *pitar* in Persian and Sanscrit respectively, and *padre*, *vater*, *père*, *papa*, etc., in modern languages. The French *paon* stands for Father-Sun, and if we omit the unimportant *cock* and *hen* suffixes, we have *pea* or *pi*, the Father.

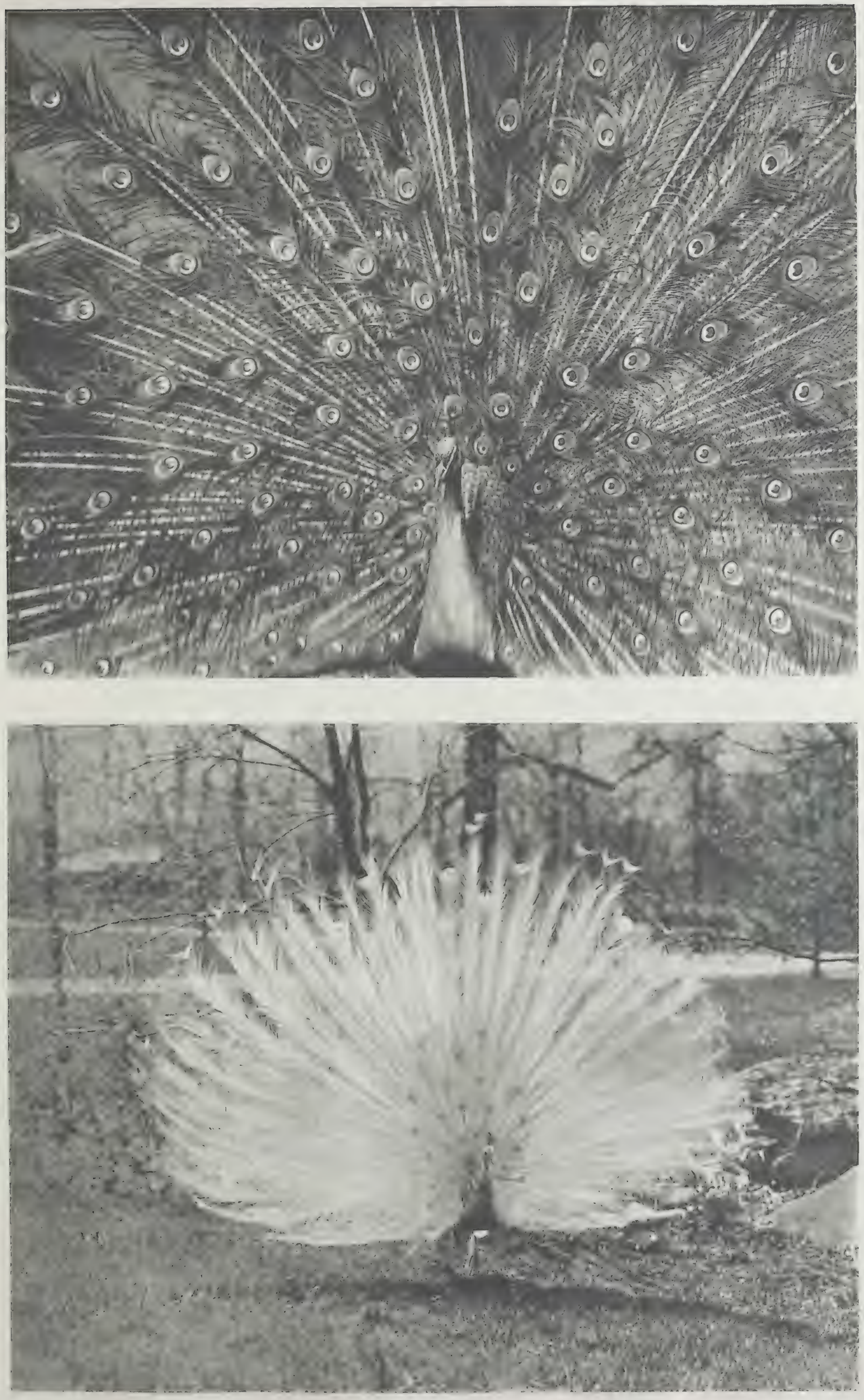
In travelling through the East, one constantly encounters strange superstitions which the natives entertain concerning Peafowl. A well-educated Singhalese of high rank contributes the following, which I quote verbatim, and which may stand as a type of modern beliefs.

"Perhaps it is little known that the peafowl among the feathered tribe, just as the mongoose among the quadrupeds, is one of the most deadly foes of the snake. Ukkussa and Kurulugoya are also destroyers of serpents, but the peacock is considered to be the deadliest and most formidable enemy. The bill of the peafowl is held in great esteem by many as a sure cure for snake poison. The wild boar and the iguana, too, wage war with serpents and eat them. It is common knowledge that the cry of the peacock addles snake-eggs, just as the scent of the 'eramudu' flower makes almost all kinds of serpents betake themselves to water, and for some time lead a sort of semi-aquatic life. I have observed that the peafowl (also the mongoose) has some hypnotic influence over serpents. When a snake sees a peafowl or a mongoose, it will not try to avoid, hide or escape, although it has the opportunity; but, on the contrary, it will prop up its head and steadily gaze on at the foe as if fascinated or petrified for some time, and then will by degrees droop its head till it touches the ground, and then lie fully stretched out, as if dead. This state in Singhalese is called 'depenewetima,' which is mesmerism, hypnotism or intense fascination. It is difficult to say whether, to bring on this state of morbid drowsiness in the snake, it is necessary that the peafowl or the mongoose should also see it; or if merely their being seen by the former—the snake—alone would produce the effect. It would be very interesting to ascertain this fact, if possible. The cat, too, has some such influence over snakes, perhaps in a smaller degree. A snake-bite would not kill a cat, provided it is bitten where it could conveniently keep on licking. This points to the fact that the saliva of the cat, as has been pointed out by the ancients, has some neutralizing effect on snake venom. In Ayurvedic medical books it is advised to make cats or mongoose lap meat

INDIAN AND WHITE PEACOCKS WITH TRAINS SPREAD

There is no casual arrangement of the ocelli in the train, but, when all the feathers are present and full grown, they show a very regular, mechanical design, a sequence of radiating lines. The so-called "proud" pose of the head and neck is due rather to the necessity for a complete change of balance, in order to support upright on their ends the one hundred to one hundred and fifty great feathers in the train.

There is no doubt that the birds appreciate an audience, and, in a park, will often approach closely a crowd of people, and deliberately display before them for a half-hour at a time.



INDIAN AND WHITE PEACOCKS WITH TRAINS SPREAD

broth and give the remainder to persons suffering from snake-bites to drink, as also to make these animals lick the parts stung by the snakes. The flesh of the peafowl and mongoose has also been recommended as a diet helping to counteract the effects of snake venom. For some years, till some months back, I had with me four mongoose, two Indian and two Ceylonese, and while they were here the snakes made themselves very scarce indeed in the whole neighbourhood, although we had plenty of them before. Since I lost the mongoose, snakes have been re-appearing. In my Balangoda house I once had seven peafowls at one time. My garden there is a very old one, thickly wooded, with an old 'galweta' running round it. This old-fashioned 'galweta' formed a very commodious and delightful abode for snake-kind, and plenty of them lived there. Hardly a week passed without somebody reporting that he came across a cobra or a polonga. But some time after the peafowls had been brought in, these reports began to get scarce, and some months after they ceased altogether. Evidently the snakes, not liking the invasion of their territory by their hereditary foes, the peafowls, migrated or else were eaten up to extermination by the feathered invaders; as if once more in illustration of the truth of that law of nature—the survival of the fittest. But this was only for a brief period. True, the peafowl reigned supreme, but no sooner had they disappeared by death and other natural and also unnatural causes, than the serpents lost no time in reasserting their rights; and now they are comfortably domiciled once more in their old domains. Does this, too, illustrate some great truth, I wonder?"

Peafowl figure largely in medicine. Singhalese pharmacopœia recognizes the fat of this bird as a cure for rheumatism, sprains and dislocations. The eye, or ocellus, in the train is considered to be an excellent antidote against rat-bite. The feather must be wrapped in a piece of dried plantain leaf, cigarette-like, and the smoke inhaled three times—once in the morning, in the evening, and finally on the following morning, the venom then being counteracted. These ocellated feathers are also used for ophthalmic diseases. The crest of the bird, ground to powder and swallowed, produces some healthful effect, the exact nature of which I could not ascertain.

In the Satpura Hills the native Bhils are divided into more than forty clans, each symbolized by some natural object, organic or inorganic. The Mori clan takes its name from Mor, their Peacock token. These people never molest the bird. When they wish to worship it, they go into the jungle and search for its tracks. To these they salaam, carefully clean the ground all around, and laying down a bit of red cloth, they leave on it an offering of grain. In the earth alongside they draw a swastika. If a member of the Moris sets his foot upon the track of a Peacock, he expects to suffer from some disease as a result. At a wedding, a little effigy of the bird is worshipped. If a woman of this clan should chance to see a Peacock, she must turn away at once or else veil her face.

The Singhalese have a pleasing little legend, which tells how the Ground Thrush, or Pitta, once possessed the plumes of the Peacock. One day when bathing, the Peacock stole its dress, and ever since the disconsolate Pitta wanders through the jungle, calling for its lost garments—*ayittam! ayittam!* (my dress! my dress!).

Whether true or not, the natives of all the countries inhabited by Peafowl firmly believe that the birds are the favourite food of tigers and leopards, and that these animals exercise a peculiar influence on the Peafowl by their mere presence. It is said that the birds will either fly directly at the great cats and buffet them with wings and spurs, or they will stand paralyzed with fear, in either case falling an easy prey to the carnivore. When such an idea has the widespread belief which this has, there is always some truth at the bottom, but I had no chance to verify or disprove it. Colonel Tytler relates an incident in detail which bears directly upon this subject. One day, when stalking a Peacock, he was surprised to find that he had suddenly closely approached it, and that, bestowing no thought on him, it seemed intently gazing on a tiny patch of jungle just in front. Halting for a moment, he discovered a leopard stealthily crawling on its belly towards the Peacock. He was much astonished; he had never heard of leopards in the neighbourhood, but his astonishment exceeded all bounds when, on his raising the gun (he had ball in one barrel), and covering the leopard, it suddenly threw up both its paws and shrieked in a voice hoarse with terror, "*Nehin Sahib, Nehin Sahib, mut chulao*" (No sir, No sir, don't fire). He said that for a moment he thought he must be going mad; floods of reminiscences of enchanted princes, fairy tales, wehr-wolves, and the like, flashed like lightning through his mind. The next, he saw a man very cleverly got up in a leopard skin, with a well-stuffed head, and a bow and arrows in one paw, standing before him.

From this man he learnt that he was a professional fowler, and that thus disguised he always pursued Peafowl, as whenever able to get anywhere near them, they always allowed him to approach near enough to shoot them with his bow, or at times even to seize them with his hands.

The Javanese believe firmly in the intimacy between tiger and Peacock, and give as the reason that the latter likes to feed on the intestinal worms of the tiger's victims, taking them after the tiger has left the body of its prey. In other countries the tiger is considered to benefit from the wariness and quick senses of sight and hearing of the bird, and this is not an unreasonable explanation.

Where Peafowl are not held sacred, the natives have many ways of snaring them, both by dead-falls and by nooses attached to bent saplings. In some cases the birds are enticed by imitating the call of the male. This is reproduced with wonderful closeness, the native placing his hand over his mouth and producing the sound from the depths of his chest. Another method of taking Peafowl is by building a blind near a spring, and waiting until the birds come to drink. The chances of success are increased by hanging white rags and pieces of tin on bushes near adjacent drinking places to frighten the birds. In this way junglefowl are also taken.

In wet, thick jungle, if hunted without dog or beaters, the Peafowl will usually run along, slinking behind bushes and making their way with remarkable silence and rapidity through even the densest thickets. But at the least real alarm, the birds take to wing. When unencumbered by drenched plumage in any kind of open country, they usually rise at once, and make their way into the tops of the tallest trees, where their quick eyes foil any attempt at stalking, and unless the jungle is of the densest character, making it hopeless to reach the foot of the tree and obtain a shot. Many accounts of Peafowl shooting have been written, and may be consulted in the host of books on sport in India. The easiest way to get them is to mark down their roosting tree, and while I was glad to avail myself of this for the sake of specimens for scientific study,

THE ACTIVITIES OF PEAFOWL

I

Not only is it necessary for the head and neck to be drawn stiffly back when the train is spread, but the true tail is of great importance in acting as a posterior support. The twenty great brown tail-feathers form a solid fan against which the five score or more tall shafts lean securely.

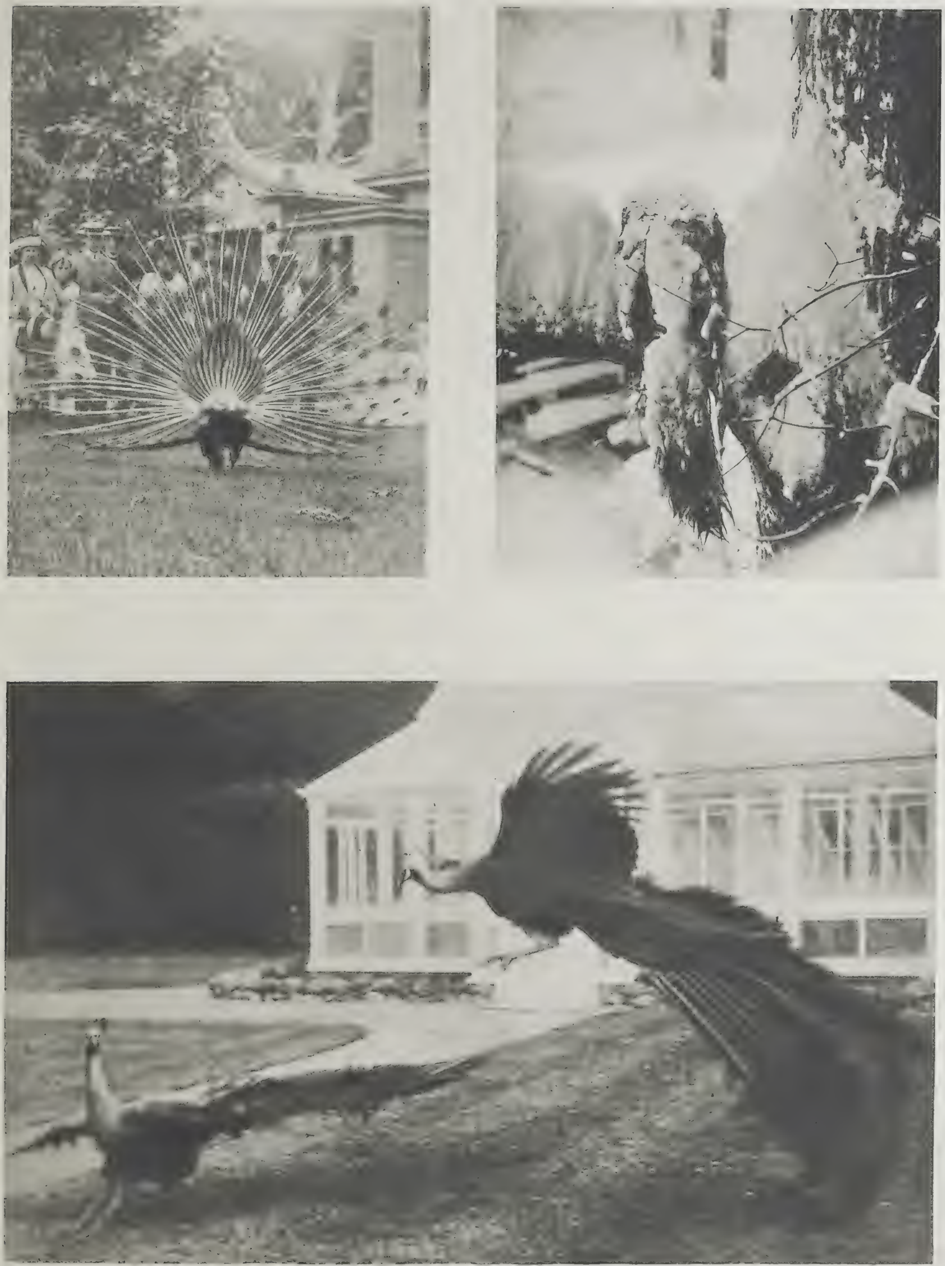
II

Although truly tropical birds, and able to withstand the most extreme heat of the Indian plains, peafowl adapt themselves to severe cold in northern countries. I have often seen these birds go to roost in tall trees late on a winter evening, and next morning be completely hidden from view in wet snow which had drifted over them.

III

In spite of the weight and obvious inconvenience of the great train of feathers, wild peacocks are able to escape quickly by remarkably vertical flight, and to roost at night in the tallest trees. At the breeding season, besides displaying before the hens, the cocks wage fierce battles with one another, leaping and dodging and striking with their spurs at a rate of speed, and with an activity, which seems quite independent of the weight and drag of the following, curving, twisting train.

PHOTOGRAVURE PLATE 81



INDIAN PEACOCK: REAR VIEW IN DISPLAY, SHOWING TRUE TAIL AND TRAIN.
PEACOCK WINTERING SAFELY IN ZERO WEATHER.
PEACOCKS FIGHTING WITH EACH OTHER AT THE BREEDING SEASON.

sportsmen might look askance at it. On the other hand, from the ethical and æsthetic point of view, there seems little in favour of the opinion that "to see a magnificent fellow, with his long train, coming over you, and then tumble him over—head over heels, head over heels—with a thump on the ground as he crashes through the boughs, is by no means an unpleasant sight, to say nothing of its being very pretty ball practice." The flesh of fully adult birds, those carrying the most perfectly developed trains, is usually dry and rather insipid, very fortunately for the birds.

The religion of the Jains forbids them to take life, and this throughout many parts of India has been a factor in the protection of wild life more potent than any governmental laws could ever be. But it works both ways. If the defenceless bird is protected, so is its enemy. So, while bird life as a result is unusually abundant and fearless, yet there has ensued no unusual change of balance. But in the case of a bird like the Peacock, the effect of wholesale protection is at once noticeable. As I have said elsewhere, this bird in the parts of its range, where it is protected and where it is unprotected, presents the extremes of tameness and wariness. In the vicinity of shrines, where the sacred birds are fed by the fakirs and pilgrims, they gather from the jungle in large numbers, and when crossing a narrow valley in the vicinity of such a place, the whole country may suddenly become alive with their beautiful forms, several hundred rushing *en masse* ahead of one, a score rising at once and flying over the backs of the others, and these in turn beating up and over the low trees.

Where the birds receive no such protection, laws have been passed regulating the shooting, although in spite of everything they have become extremely rare or extinct in many places. A few years ago, in Ceylon, one could obtain a permit to hunt deer and Peafowl for 3.50 rupees. To-day such a licence costs almost thirteen times as much, and lasts from November to May. In the Government Reserved Forests in India, Peafowl may not be shot between March 1st and September 15th, the usual time of hunting being from November 1st through February. The close season in the Central Provinces is from March 1st to November 30th. In Mysore they are shot by the natives the year around.

Even where protected, natives without caste search for their eggs and eat them by the hundred, and until recently the traffic in their skins and trains was enormous. Seventy thousand bundles of eyed plumes have been imported by one dealer in England in a single week. Most of the plumes gathered in India are exported, although in parts of the south-west coast there is an industry of considerable size, the feathers being used to decorate hand-screens, fans and mats made of the roots of the kaskas grass. On the whole there seems little danger of this bird's extermination, and Peafowl will probably survive long after most of the pheasants have vanished from the earth.

CAPTIVITY

While we have historical knowledge of the keeping of Peafowl in captivity hundreds of years ago, yet its mentality is such that it has never become an intimate servant of mankind, neither serving him commercially as does the domesticated fowl with its unnatural fecundity, nor allowing him to breed it in all forms and colours, like the Rock Dove. Whether we believe or not that it has conscious pride in its beauties, its chief function in association with mankind is one of ornamentation.

The only variety which man has obtained by careful selection is the white Peacock. Pied birds occur now and then, the white being often asymmetrically disposed. From continual breeding with such birds, pure white Peafowl have been obtained, even the metallic train being of this colour. The second effect of captivity is the adventitious appearance of a most interesting mutation, commonly called the Black-winged or Japanned Peafowl. Of this I shall treat in detail on a later page.

It is remarkable what hardy birds Peafowl are, even individuals which have been brought direct from India being able to withstand very low temperatures. They perch out-doors in high trees all winter, and even when frozen solid in a snow-drift have survived after two days' incarceration. I have known them to be almost buried in snow, not descending from their perch until the sun was well up.

Of sixty-six specimens in the London Zoo the average length of life was two years, the maximum a little over eight years. Instances are not uncommon of individual birds reaching an age of forty or fifty years, while there is one authentic record of one which died from old age at ninety-six.

When the eggs of wild birds are hatched by a domestic fowl, the chicks are tame at first and obedient to their foster mother. They will strut and spread their diminutive tail when only a few weeks old. Later they become more wary, and unless caught and confined will eventually leave the hen and go off to the jungle. Once caught in a trap or snare they can never again be taken in one.

Captive birds, even when provided with mates, will often display to other birds, animals or people, and they have a curious tendency to form a close, intimate friendship with some one animal, such as a dog, cat, kitten, fowl or turkey, permitting any familiarity and eating and sleeping close to the object of their affection.

MUTATION: BLACK-WINGED PEAFOWL

Under this heading I unqualifiedly place the variation which occurs now and then among captive birds, and to which, under the erroneous idea that it was a separate species, Sclater gave the name *Pavo nigripennis.* The first mention of this form seems to be by Latham in his "General History of Birds," where he says, "A pair of these gorgeous birds was in the Leverian Museum, and said to be natives of Japan, but from later information are rather supposed to inhabit Thibet or in Tartary; are scarce birds, and little known except in our kingdom and Holland . . . how far this is distinct, or a Variety of the Common Sort, we are not prepared to answer, but it is certain that they multiply with each other, and the produce, as may be expected, varies accordingly."

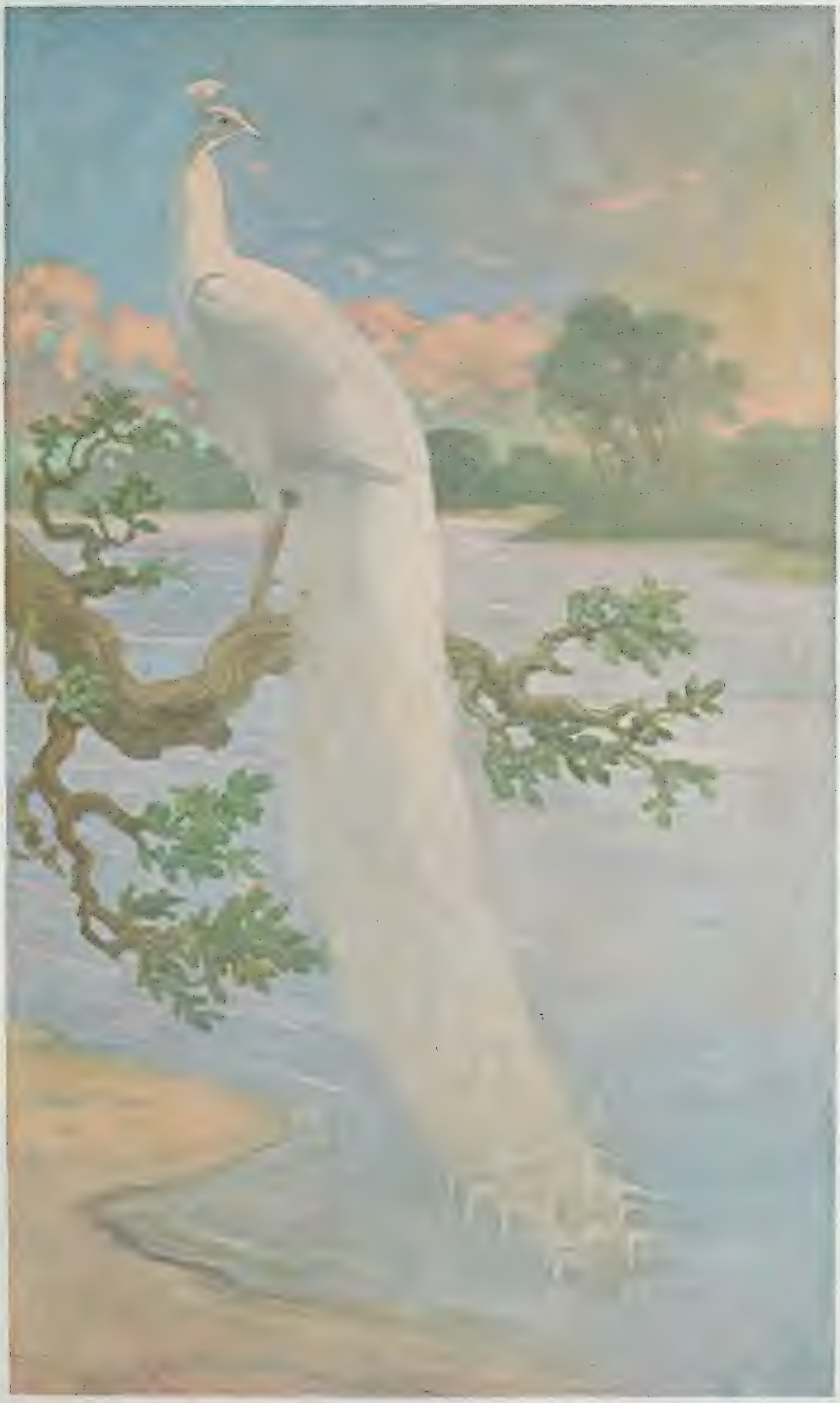
Its history in later literature is chiefly an uninteresting discussion of its status which need not be repeated. The upholders of the specific theory were not to be blamed for thinking it a wild species until it was conclusively shown that it appeared adventitiously in broods from normally coloured *Pavo cristatus* parents. We have as yet no clue to the *raison d'être*, although careful experimentation should reveal it.

It is probable that it has never appeared in a wild state, although more or less completely albinistic cocks and hens are not unknown among the birds which feed near the temples in India. It is also quite certain that, while it is an undoubted mutation, yet if it appeared in a feral state it could never become widely established, for the very

WHITE PEACOCK

These rarely beautiful birds are never found in a wild state, but are bred in captivity from birds showing a few white feathers. When at their best, these peafowl show hardly a particle of pigment, even the feather eyes being without their metallic copper and emerald. When the train is spread, however, and the light is just right, every detail of the eye pattern can be seen, appearing and reappearing like the successive ripples in watered silk.

PLATE LXXXVIII.



WHITE PEACOCK.

light colour of the chicks and females is a handicap too serious to overcome. The chicks would be exposed to constant danger of discovery by their myriad enemies, and the hens on the nest would be marked down in a short time by some sharp-eyed carnivore.

It is remarkable that the mutation is in the direction of extreme paleness in the chick and hen, yet melanistic in the cock, the chief difference in the latter sex being the wing-coverts and secondaries, which are black and green in the Black-winged bird and cream-coloured marked with black in *cristatus*. I see no reason to consider this mutation an atavism toward any ancestral plumage, nor has it anything, except superficially, in common with hybrids between the two wild species of Peafowl.

Black-winged chicks may form the entire brood (two broods of six and seven respectively are recorded), or there may be but a single mutant out of five or six eggs producing normal *cristatus* chicks. Blaauw in Holland has for many years reared ten to twenty birds annually, and records that he has observed no variation, the Black-winged birds in all plumages being singularly regular in colour and pattern. On the whole they appear more susceptible to cold than the Indian bird, but in warmer countries where both forms are kept in the same flock, the new variation has the advantage in courtship. Three instances have come to my notice, in addition to those mentioned by Darwin, where the mutant was consistently more successful in obtaining the favour of the hens, with the result that the new form was becoming dominant, or in one case had actually swamped the parent species. Like the Black-throated Golden Pheasant, the Peacock mutant seems essentially a product of some subtle change in the environment, incident upon captivity.

VARIATIONS

Aside from the parti-coloured and pure white Peafowl, we occasionally find among domestic birds the phasianine phenomenon of females assuming male plumage.

In one case a Peahen ceased to lay eggs when about twenty-two years old, and year by year assumed more and more the appearance of the cock, until when she died, at thirty years of age, her plumage and even her train was indistinguishable from that of a male bird.

DETAILED DESCRIPTION

Adult Male.—Entire top of the head covered with short, curly metallic green and blue feathers. Rest of the head, except the bare facial area, similar, but the featherlets are not curled. From the occiput rises an erect crest of twenty to thirty feathers, about 60 or 70 mm. in length. The shafts are glistening white and very rigid, scantily clothed with barbs up to the tip. Here a terminal fan-shaped tuft is black at the base, changing abruptly to metallic bluish green. These twenty-odd feathers grow in the form of a horse-shoe or three-quarters of a circle, and there is a distinct outer and inner side to the little fan tufts, the inner side being less brilliant and greener.

The neck is greenish or bluish, shading into rich metallic purplish blue on the mantle and breast. Basally each feather changes to green before merging into the still more basal and concealed black. Visible parts of the feathers of the mantle and back metallic golden green, with a central arrow-mark of copper, and a narrow greenish-blue shaft-stripe. Each feather is edged with a very narrow line of black.

Feathers of the lower back, rump, and especially the upper tail-coverts enormously developed, forming the characteristic train. In a very general way these feathers resemble those of the crest, the shafts being ivory white, scantily and loosely barbed throughout their length except for the terminal eye or crescent. The majority of these feathers are ornamented with the eye or ocellus, each a great subterminal spot of shining green, with a bilobed pupil of purplish black in a field of golden copper. This in turn is surrounded with rings of gold, copper and other metallic hues. Many of the lateral coverts are feathered only on the outer web, being a uniform golden green. The longest coverts lack the eyes and are terminated with green, crescent-shaped tufts.

The eyed feathers begin rather abruptly on the lower back, but the transitional zone shows that the eye takes its origin in the widening of the narrow green shaft-line which first appears on the mantle.

The lesser and median wing-coverts, scapulars, tertiaries and inner secondaries are buffy white, irregularly barred with black, which is often glossed with green. The base of the mantle and upper back feathers is also buff and black. The primaries and their coverts and the alula are pale chestnut, the inner one or two primaries somewhat mottled with black on the inner web. The outer seven secondaries and their coverts are black. The outer rows of median coverts are black, glossed with bluish green.

Lores, superciliary stripe, chin and throat dark metallic green. Lower neck and upper breast shining, rich purplish blue. Lower breast and flanks green. Belly and largely developed, downy, under tail-coverts blackish brown. Thighs buffy white. Tail of twenty feathers brownish, the outer webs basally slightly mottled with brown. All but the central pairs have a pronounced inward curve.

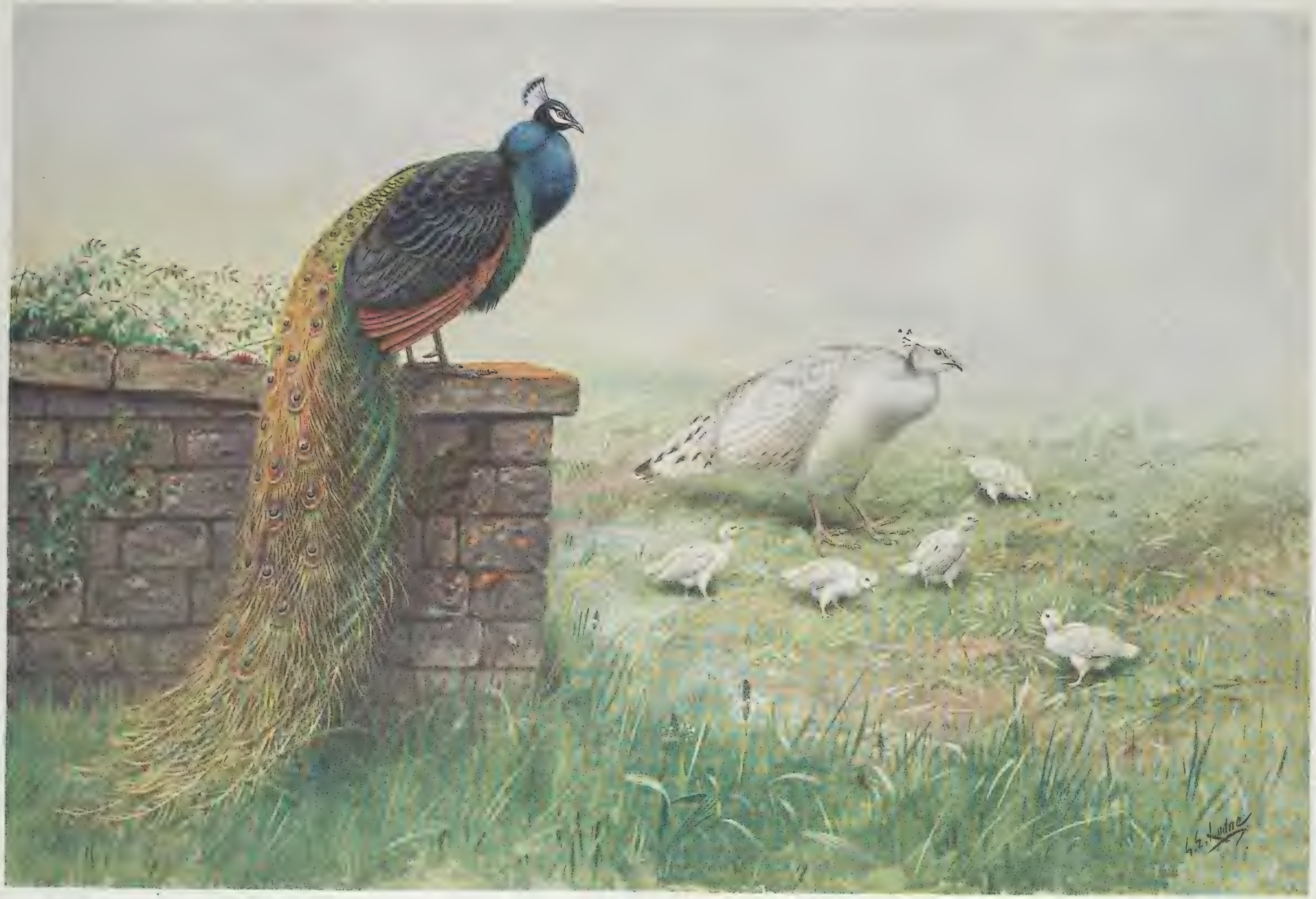
The bare facial area consists of a narrow line beginning at the beak, and in fact sends forward a fleshy line over the beak substance. It extends backwards above the lores, and over the eye, separated from that organ by the feathered superciliary line. The lower, bare area begins at the gape and extends backward, below and behind the eye, reaching up to the side of the occiput. This bare region is swollen, wrinkled and sparsely pitted with dots from which spring very short feather hairs. It is very pale yellowish or sometimes greenish white in colour. The beak is dark horn; irides hazel; legs, feet and spurs greyish horn; the latter are short and stout, usually under 20 mm. in length. Length, exclusive of train, 1,000 to 1,200 mm.; length of train beyond tip of tail, 600 to 1,100; maximum expanse, about 1,500; bill from nostril, 20; wing, 430 to 500; tail, 400 to 440; tarsus, 130 to 155; middle toe and claw, 90 mm. Weight, $8\frac{3}{4}$ to 11 pounds.

Adult Female.—Top of the head, lores, superciliary stripe, ear-coverts and nape dark chestnut, many of the feathers on the first-mentioned area tipped with metallic green; crest much like that of the male, but the terminal racket chiefly chestnut tipped with metallic green. Upper neck chestnut tipped with green, while the latter colour is dominant on the lower neck and upper mantle. Posteriorly on the mantle the feathers are tipped and mottled with buff, and the green dies out and gives place to the dull brown which characterizes the upper plumage in general. On the mantle, back, and

BLACK-WINGED PEAFOWL

THIS is a very remarkable sport or mutation occurring sporadically among domestic Indian birds, sometimes one or two in a whole brood. The cock is darker and the hen and chicks much whiter than wild birds, the pale colour in the two latter cases making it impossible for this form to hold its own against the many enemies of a life in the wild. Although the Black-winged Peacock cannot stand cold as well as the normally coloured birds, yet, in warm climates, it has been known to possess the advantage in courtship, and thus gradually to replace all the ordinary birds in a flock.

PLATE LXXXIX.



BLACK-WINGED PEAFOWL.

scapulars this is quite plain, but on the coverts and inner flight feathers it is indistinctly mottled with buffy white. Primaries dull rufous, more or less mottled with dark brown, especially on the outer webs. Secondaries brownish black, outwardly edged with buffy-white mottling. Rump and upper tail-coverts brown, occasionally tinged with metallic green, and more thickly mottled with buffy white than elsewhere on the dorsal plumage. Tail-feathers, eighteen in number, blackish brown, tinged with green on the outer web, sometimes tipped with buff, and the central pairs indistinctly mottled with buffy white. Chin, throat and upper neck white. Lower neck and breast brownish black, much of the visible portion metallic green, with a well-marked terminal fringe of pale buff. Posteriorly on the lower breast the buff increases, soon eclipsing all the green, so that the breast, sides and flanks are wholly of this colour, tinged more or less with rufous. On the belly and under tail-coverts the brown becomes dominant in the form of irregular mottling.

The bare facial area is of the same general character as in the male, pale sulphury yellow in colour, often with a greenish tinge. Irides dark hazel; bill dark horn, with the under mandible paler and whitish at base; legs and feet pale fleshy horn; spurs developed but short, seldom over 11 mm.

Length, 900 to 1,000 mm.; bill from nostril, 17; wing, 400; tail, 355; tarsus, 125; middle toe and claw, 85 mm.; weight, 6 to 8½ pounds.

Chick in Down.—The Peafowl chick is not distinguished by any decided patterns or colours. The top of the head and nape is brownish black with such broad tips of seal brown that this is the dominant colour. On the upper body plumage the brown becomes darker and more rufous, and is obscurely mottled with black. The lateral lines so general among birds of this family are scarcely evident, the brown back merging into the indeterminate buffy brown of the sides, and this into the creamy buff of the ventral surface. The wing and tail-feathers are well-grown at birth and are warm brown mottled with black, many of the coverts having paler buff tips.

The region of the eye and a line obliquely back from the orbit are dark, while a distinct loral and superciliary line, the face, chin and throat are clear pale creamy buff. The neck and breast are warmer buff, darkened with basal brown.

Juvenile Plumage.—This plumage bears a general resemblance to that of the adult female, but differs in a number of particulars. The change from down to juvenile and from this to the first-year plumage is slow and rather irregular, both in wild shot and captive birds. A number of specimens show evidence of one, and perhaps two, additional sets of rectrices during this period, each set differing chiefly in length and hardly at all in pattern. The first set is tiny, usually 50 mm. when full grown, and never consists of more than eight pairs. The rectrices which give place to the very different first-year plumage number nine pairs, and may be 165 mm. in length. The fully-developed juvenile garb is a quiet one, dark brown in general, indistinctly clouded or mottled with paler buff. Almost all the feathers of the upper parts are tipped with a broad buff line and a large sub-terminal area of black. The rump and upper tail-coverts even of this immature plumage are unusually long and loose-vaned, with the brownish-buffy colour predominating, and the typically juvenile terminal markings well developed.

The primaries are pale chestnut, mottled, especially toward the tips, with black. The secondaries are coarsely mottled with pale buff. The tail-feathers are long, pointed and curved, brownish black and brokenly barred especially on the outer web with buffy white. The markings of the head and neck are almost exactly similar to those of the adult female, while the crest differs chiefly in its smaller size. The lower neck shows considerable metallic-green gloss. The ventral surface is like the adult female, except that there are only slight traces of the pectoral green, and the abdomen is buffy white rather than creamy or rufous.

First-year Plumage.—The utmost variation is displayed by the plumage of birds in this moult. A very few days of advanced or retarded growth results in an unexpected range of variation. The head, neck and breast are usually well advanced in coloration, occasionally showing as pure metallic sheen as in adult birds. The mantle and back reveal only small and irregular iridescence, and this always in the dark areas between the pale buff bands. The primaries are quite clear rufous, but the secondaries are heavily streaked and barred with buff. The under-parts show the most variation, usually an unpleasing mixture of rufous buff and dark brown, with here and there a tinge of green gloss. The train is absent, although when a few months have passed, if any of the upper tail-coverts be accidentally pulled out, they will be replaced by considerably larger ones, projecting in a ragged, irregular way beyond the tip of the tail.

In the second and third years the plumage clears up, the buffs giving place to the clear-cut iridescence of the adult. The train gains in length and perfection of pattern and the fourth-year bird appears to the casual observer to be in full plumage. But there is a decided improvement in the ocelli of the succeeding year, and not until the fifth year may the Peacock be said to reach the acme of development. It breeds from the third year on. Although I have watched marked feathers carefully throughout an entire season, I have observed no change of colour without moult. Instead of a gain of the green gloss, there has invariably been a loss of this iridescence, a dulling of the feathers as the wear and tear told on their surface.

The train, which consists of one hundred to one hundred and fifty feathers, is moulted about mid-July and continues for about three weeks. The wing and tail-feathers are shed and replaced at once, but the ingrowing train sometimes takes four or five months to reach its full growth.

BLACK-WINGED MUTATION

Adult Male.—On the mantle and back a golden-bronze iridescence usually predominates instead of green, while in the train coppery bronze is rather dominant over the green of the normally coloured bird. This is, however, not an absolutely constant character, nor is there any persistent difference in the plumage of the head, neck or under-parts, but the wings are quite unlike in the two forms. All trace is lacking of the buff and black-barred scapulars, coverts and inner secondaries. These feathers are black, shot, especially on the visible portions and strongly edged, with glittering green and bronze. The primaries are unaffected, except that they show a greater amount of dark pigmentation on the outer webs. The primary coverts are quite dusky, the rufous being confined to the basal area.

The only differences other than colour which have been observed is an apparent constant difference in the overlapping of the median wing-coverts and in the specialization of the upper tracheal rings.

Adult Female.—Top of head, side and hind neck rufous with whitish tips on the crown and metallic bronze on the hind neck. All the rest of the head, neck and entire under surface dirty white, many of the ventral feathers with dusky shaft-streaks. Below the area of rufous on the upper hind neck the metallic tips become larger and change to green, but soon disappear altogether.

The entire upper surface is white, thickly grizzled and mottled with dusky brown, this colour dying out on the outer and on the longest wing-coverts, and becoming darkest and heaviest on the rump and upper tail-coverts. The margins are rather clear white, revealing the contours of the feathers. The longest coverts, tertiaries and inner secondaries are white on the outer and heavily mottled on the inner web. The dark pigment on the flight feathers increases as we go outward, until the outermost feathers are heavily marked on the outer webs and almost solid dark brown on the inner and along the shaft of the outer webs.

The primaries are rufous, with dark mottling along the shaft and over the outer webs. The tail-coverts are pure white with a broad, tapering, dark brown shaft-streak. The rectrices are brownish black with diffuse paler mottling along the margins toward the base of the feathers.

The crest is dull rufous with more or less of a slight metallic sheen here and there.

Chick in Down.—Silky, pale, creamy white down all over. Bill and legs pale flesh colour.

Juvenile Plumage.—Mantle and rump clouded with dusky; back buffy. Scapulars and lesser coverts buffy white more or less clouded with darker. Flight feathers creamy white at tip becoming dusky toward the base, with a narrow dark shaft-stripe and mottling on inner web. Tail-feathers similar. At the second annual moult the males come into almost full colour except for the train.

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Peahen, Douglass, Zoologist (3), XVI. 1892, p. 428 [Female assuming male train].

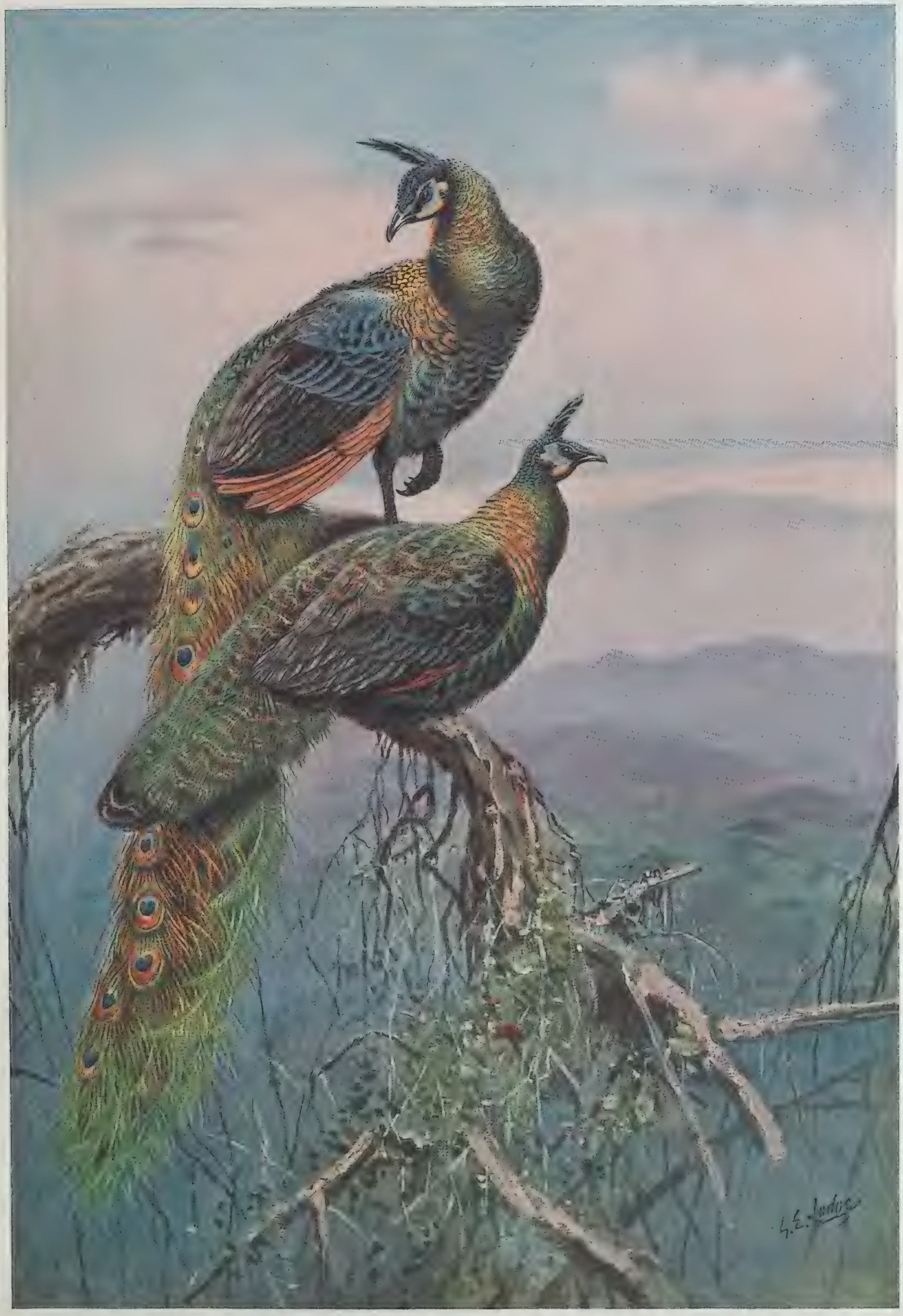
Black winged Peafowl Tegetmeier, The Field, 1896, p. 905.

GREEN PEAFOWL

Pavo muticus Linnaeus

At early dawn, before the heavy dew has dried from the foliage of the Malay jungles, the peafowl awaken on their roosts on tall, bare trees, and standing in the first rays of the sun, shake a myriad drops from their plumage. They walk up and down the lofty branches, and half-spread their wings until the great plumes are dry. Then, with a single spring, they leap outward into space and scale down, down to the narrow opening among the trees which becomes a river.

PLATE XC.



GREEN PEAFOWL.

GREEN PEAFOWL

Pavo muticus Linnaeus

Names.—Specific: *muticus*, Latin adj. docked or curtailed. English: Green or Green-necked; Burmese, Siamese, Eastern, Javan or Malay Peafowl. German: Der Javanischer Pfau, oder Birmesischer Pfau. French: Le Paon vert, ou Paon spicifère. Native: Mĕrak, Burong Mĕrak (Malay); Mah (Malayan Negritos); Chêm-mĕrâk (Central Sakai of Batang Padang); Doun, Doung, Oodoung (Burmese); Marait (Talain); Toosia (Karen); Pegu-majura (Bengali).

Type. Locality: "Habitat in Japonia." Describer: Linné. Place of Description: Sys. Nat. I. 1766, p. 168.

Brief Description.—Male: A tall, narrow-vaned crest; facial skin blue and yellow; head and throat green; neck and fore part of body above and below bronze, with blue centres showing on the mantle; back green, centred with bronze and edged with blue; posterior ventral surface dull green and black; smaller wing-coverts green, larger ones and primaries chestnut; train as in Indian Peacock. Female: Resembles the male, except that the upper parts of the body plumage lack the green gloss and are mottled with buff; no elongated train.

Range.—Chittagong, Burma, Siam, Cochin China, Malay Peninsula and Java.

THE WILD BIRD IN ITS HAUNTS

It was mid-October when I reached the country of the Green Peafowl among the eastern foot-hills of the Pahang mountains. One night, after a long, unsuccessful search for peacock pheasants, I had my Malay crew paddle hour after hour down the Pahang River in the moonlight. At last, when clouds came up and an increasing number of snags made it dangerous to proceed in the dark, my head man stopped close to a sandbank, warped the house-boat close in under the bushes and tied fast. I had no idea of where we were. The Malayan jungle rose high overhead—a mass of black shadow, silent, save for now and then the shrill monotone of some nocturnal forest insect. Once a half-submerged tree drifted past, scraping the sides with its withered foliage. The rest of the night passed quietly.

Early morning on the Pahang is always beautiful. As one awakens slowly from slumber, so the dawn comes slowly in this tropic lowland. The glare of the sudden leap of the sun above the horizon is dimmed, delayed, diluted by the thick morning mist, and only gradually does the dusk give way to the grey twilight of dawn. Rising on elbow and looking out over the side of the boat, the swift current becomes more and more distinct through the fog which drifts slowly downward like a sluggish, aerial river flowing gently over the denser one below. As the light grows, and the mists lift and fray upward, a low brown line shows across and down the river, and finally the shapeless masses of foliage beyond the sandbank come into view. Here and there white-barked trunks gleam like the ghosts of trees. The saturated air is heavy with the odour of the white plume blossoms. The eddies are filled with their petals. A pair of hornbills cross high overhead, wholly hidden by cloud, but registering every wing-beat in a loud, deep *whoof! whoof!* which, even through the still mist, carries far. Bulbuls burst into song, drongos send their hoarse cries down from the tree-tops, their wings flicking showers of drops from the drenched foliage.

Several great leaden forms take shape on the bars of sand up-wind, and at last I make out a quartette of statuesque buffalo, all with noses outstretched toward us, standing half on the sand, half in the water. But of far greater interest are five indistinct shapes moving about far down at the other end of the bar. Resting my glass on the edge of my bunk, I see dimly through the moist lenses a flock of Green Peafowl. They have seen us long before, but as my Malays are fast asleep, they are as yet only suspicious. We may be harmless, a huge tree stranded during the night. Two have sweeping trains which clear the sand neatly as they walk. Now and then a bird stands quite erect and flaps his wings vigorously, probably to rid the feathers of excess of moisture. In fact, I can even see the others shake their heads as the shower of flying drops sprays over them. Two young of the year are much more active than the others, running here and there, chasing one another, stopping suddenly to scratch among the gravel.

A passing log draws the attention of the Peafowl, and they all stand motionless watching it pass. The sun shines brightly for a moment, the mists swirl upward and the air is clear, showing the long range of dark hills beyond the trees. From up-river comes the invariable morning chorus, peal after peal of rollicking laughter, of the serious-faced gibbons, a family of wa-was in some distant tree-top. Then a dense cloud sweeps across the sun, and a rush of wind and fog fills the air with thick, grey twilight. A sudden shower pits the smooth surface of the river, and from the depths of all this concentrated moisture rings out the wild, unrestrained cry of a Peacock.

Half an hour later the sun bursts through and burns up the last shred of mist, but the sand-bar is deserted. Birds and buffaloes have silently gone their way. I clap for breakfast and prepare for a plunge and a long day's matching of my senses and woodcraft against those of the wary Peafowl.

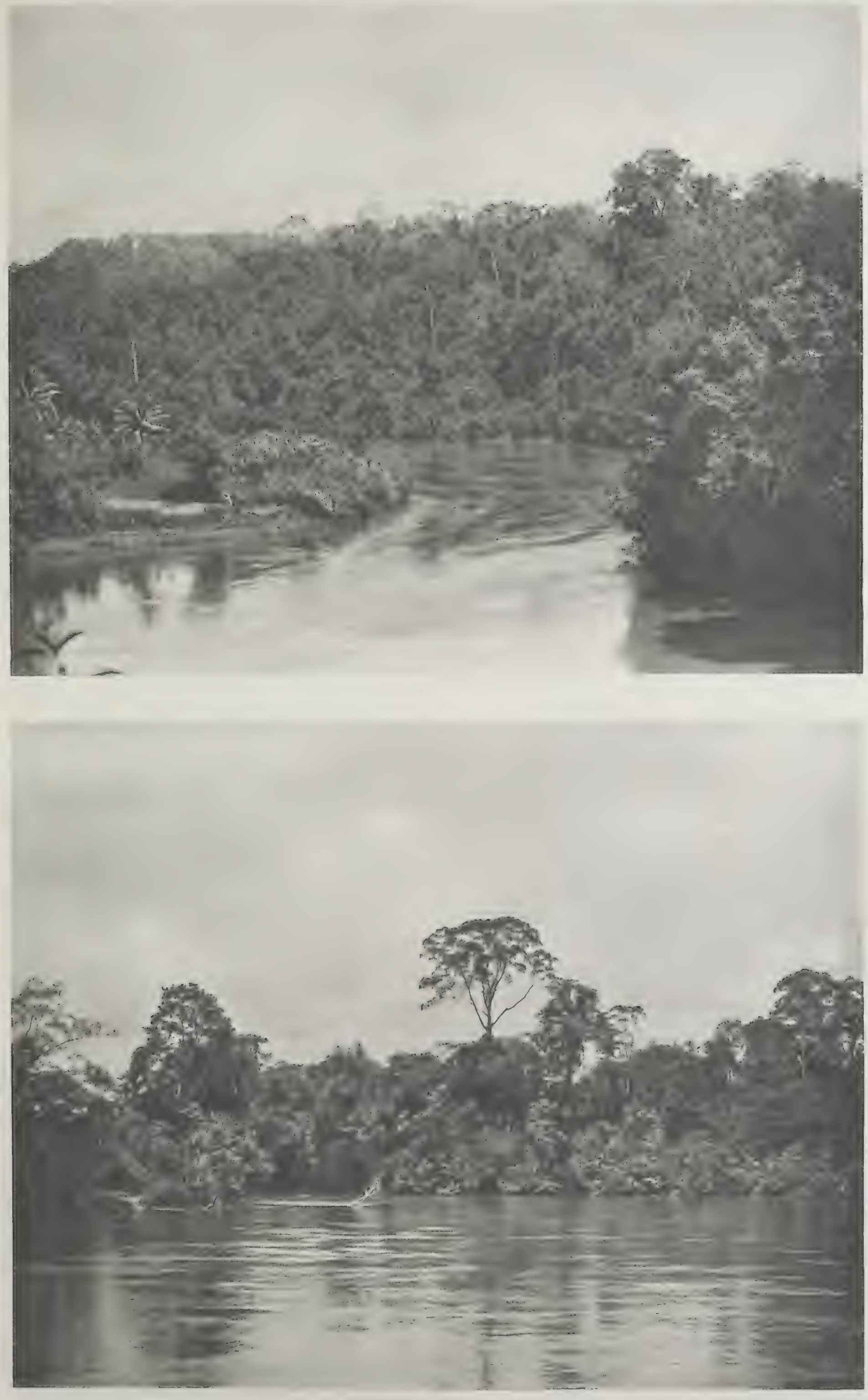
GENERAL DISTRIBUTION

The Green Peafowl is found in Chittagong in extreme West Central Burma, but does not occur in Assam. An isolated family of these birds was once observed in Assam, but it soon disappeared and doubtless consisted of birds which had escaped from captivity. From this latitude it extends southward through Arrakan and Pegu, throughout the entire length of Tenasserim. It is found to the east along the Upper Chindwin, the Bhamo District, the southern Shan States, and south through Siam and Cochin China, although from the unexplored character of these two latter countries we know none of the details of distribution. From Tenasserim southward the Peafowl is found throughout the long narrow neck of the Malay Peninsula, from coast to coast as far south as Kedah, and even down the Perak River almost as far as Kuala Kangsar. This is on the western slope of the Peninsula, but south of this point it is entirely absent from this side. On the east slope from the coast to the very foot-hills of the central mountains it is not uncommon, and it extends throughout Pahang into north-eastern Johore. The records from "Malacca" are probably erroneous, and the skins so labelled doubtless only came into the hands of the Europeans through that early port of trade.

The Green Peafowl is absent from Borneo and Sumatra, but reappears in Java. In

WHERE THE GREEN PEAFOWL DRINK

These splendid birds fly down from their roosts to some favourite spot along the jungle rivers of Malay, usually a sand-bar at a bend where they can have clear view of possible danger both up and down stream. They must also watch the jungle behind for leopards and great snakes, and the waters in front for crocodiles. When they have drunk they go slowly off to feed, or, if disturbed before they are ready, they fly up into some neighbouring tree until fear and suspicion have passed.



DRINKING PLACE AND LOOKOUT OF GREEN PEAFOWL IN PAHANG

this island it occurs generally, but, like the Ayamalas or Green Junglefowl, is rather rare in the west, becoming more abundant in the east, occurring also here and there near the south coast of the Preanger District. It is more of a mountain bird, extending up in some cases as high as three thousand feet, although it also occurs well down on the lowlands, but almost never to the coast itself.

GENERAL ACCOUNT

The distinction has been made between the two species of Peafowl that the Green bird lives rather in isolated families and is not so generally distributed as the Indian bird. But I think in this respect, as in many others, the habits of the two birds are almost exactly alike, where absolutely feral Indian birds are considered. It is certainly true in the case of the Green Peafowl that even where they are most abundant they occur in small isolated groups; sometimes two or three cocks and a larger number of hens, more often a single cock and his harem. I have observed this both in Pahang and Java.

Not only this, but these groups are extremely sedentary, and where not molested may be found in the same patch of jungle month after month, feeding in various places, but usually drinking and roosting with extreme regularity. Even where no effort is made to disturb the birds, they show a very different acceptance of this immunity. They often feed in pastures where domestic animals are kept, and less often wander into cultivated fields, but they are always on the alert and never permit the very close approach of man. No scarecrows are necessary, a single alarm will serve to keep them at a distance for days at a time.

There is considerably more variation in the voice of these Peafowl than in the Indian birds. I have heard a male call in answer to one of the latter species when it was difficult to tell the two cries apart. Both had the same harsh, strident, mournful wail. The Malay name *Mĕrak* is onomatopoetic. More than this, however, the Green bird has a second call which I have heard given time after time, the time, place and reiteration suggesting its being a new vocal acquisition. This is a subdued but very penetrating cry, several syllables following one another in quick succession, easy to imitate, but impossible to transcribe into words. The loud scream seems relegated to express emotions of fear or of intense effort, as in escaping from the onrush of an animal, or in beginning the flight up to the roost. The call or challenge note is especially characterized by its ventriloquial quality. This, one would judge, must be of great value to the calling bird, if we concede that the confusing quality be potent in the case of listening beasts of prey. The comment on the migrations and flight of the Indian Peafowl apply quite as well to the one under consideration.

As the Green Peafowl is less tolerant of the vicinity of man, so is it correspondingly more ready to accept life in the dense jungles. And yet in this, as in the other species, my assertion still holds that Peafowl are not real jungle birds. Pahang, for example, is covered for the most part with dense forest, and Peafowl are abundant, but they haunt the banks of rivers by preference. When found away from these places it is because there are large pampas-like areas, on the edge of which they may be found. They seem to want room to take to flight if need be—to perceive danger before it gets within striking distance. Other observers besides myself have noticed this, and have recorded the fact that the Pahang sand-bars form a favourite haunt of these birds. On the east coast of the Peninsula they prefer park-like country, dry if possible, or grassy land with scattered clumps of trees.

I found such a country when I crossed the river and stepped ashore after the brief vision of the five Peafowl in early morning. Every cloud had vanished, and Bukit Singum stood sharply silhouetted against the blue Malasian sky. Beyond the fringe of river jungle the region showed flat and open, a fifty-acre expanse covered with grass or small dense thickets of vetches and melastoma. A few yards from the river I flushed four birds which flew over the low vegetation and on into thick jungle. A single twig cracked and the quartette rose with a rush calling, *Wak! wak! wak! wak!* Their loud cries were answered in the distance by a pair of red junglefowl. Eight massive dead trees lifted their bare trunks and scraggly limbs high above all the jungle, and after the alarm seven of these held each a single Peafowl, while three perched on the eighth. No protective coloration for these birds! Their green and variegated plumage, according to human ideas, might merge perfectly with the jungle foliage. But they themselves had apparently little faith in such static tactics. And in this rather thinly wooded country I realized that only a subterranean creature could successfully run the gauntlet of those score of piercing eyes and come within striking distance of the trees of refuge. Two of the birds were at such a distance that they appeared as mere dots on the limbs, but my glasses showed them with heads turned in my direction, watching me with more than telescopic vision.

After watching them for some time I shot several small birds which I desired, and at each muffled report of the insertion barrel, the loud *Waaaaa-aak!* went up from each tree, uttered in a musical, quavering tone. Then I returned to the house-boat and, armed only with glasses, began a stalk around the border of the open area. I found a dense dwarf palm growth from which I could see four of the trees, while a gentle breeze which constantly moved the fronds prevented their discovery of me. Three of the Peacocks had full-length sweeping trains, and within a half-hour all had descended to the ground, the great feathers undulating with the utmost grace as the birds slanted swiftly to earth. Several foregathered a hundred yards away, and I crept slowly toward them. Here, as elsewhere, the home of the Peafowl was essentially a dove country—half-open grassland, surrounded by the dense growth of bamboo and jungle tangle through which I was making my way. Here and there buffaloes had driven a maze of tunnel paths and trodden the crackling leaves to powder, making easy stalking. Every few yards from the heart of old buffalo sign there shone the intensely scarlet terrestrial blossoms of the ground ginger (*Hornstedtia metriochilus*), gleaming from the black mould like huge jewels—leafless blossoms of glowing pigment.

My quest this particular day was futile, the birds were too much on the alert, and a wretched little babbler set up a screeching alarm just as I had settled into a good point of vantage in an ancient buffalo wallow, and the Peafowl did not stand upon the order of their going.

Future stalks were more productive. The easiest method of observation was to locate a favourite drinking-place by tracks and sign on some gravel or sand-bar where the river was narrow, and then take up a good point of view across the stream. Here

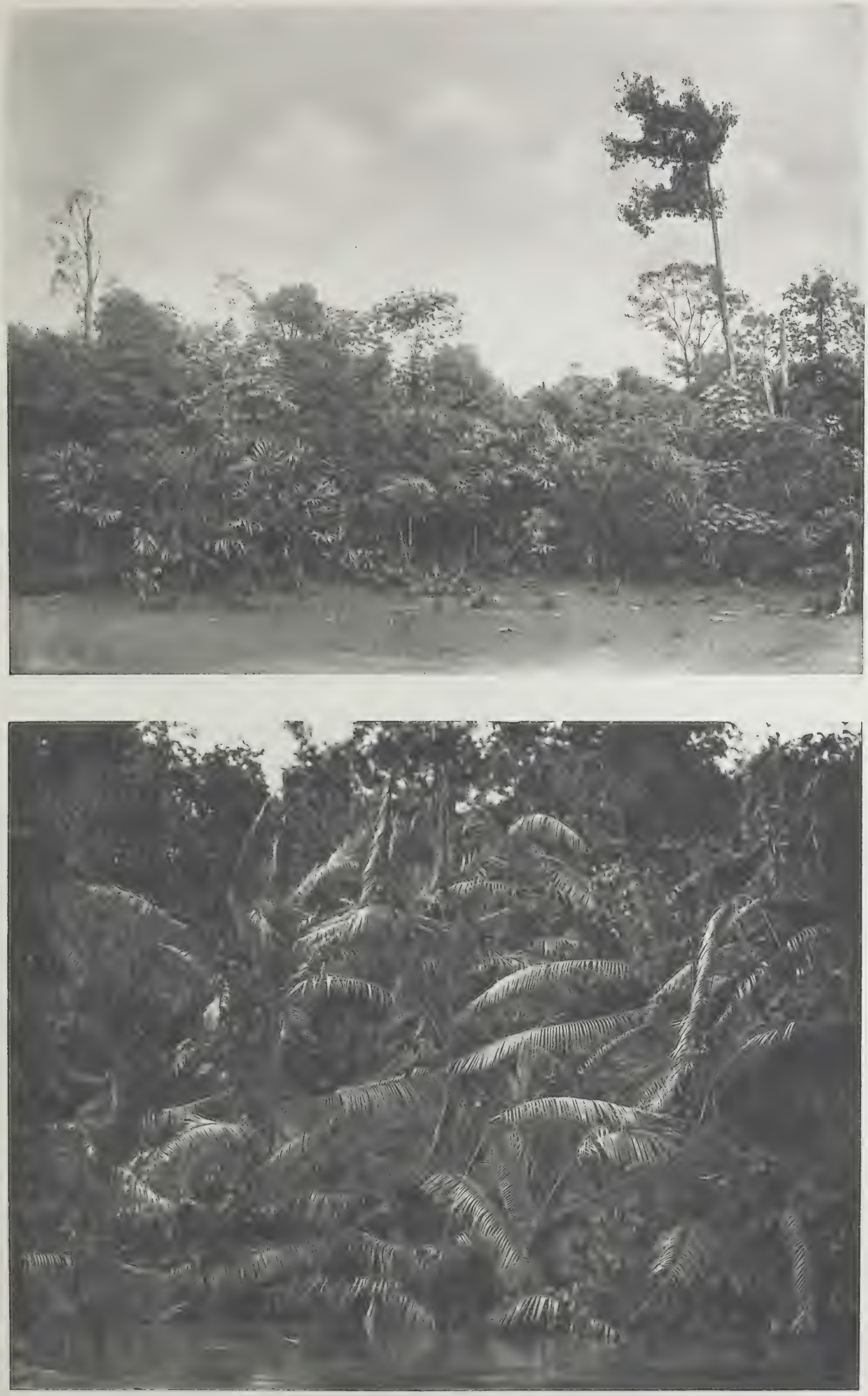
WHERE THE GREEN PEAFOWL FIND FOOD AND REST

I

After a leisurely morning drink, the birds feed; not in deep jungle where the sudden rush of an enemy would find them helpless, but in an open glade with an abundance of white ant nests, or else along the more exposed banks of the river itself.

II

As the heat of the day increases, the birds often work their way to the heart of a rotan thorn tangle, and here doze and idly preen their plumage and wait for the coolness of afternoon. No creature in the world can move quickly or quietly in such a maze of thorns and cruel briers, and the birds are safe from all molestation.



FEEDING GROUND AND MID-DAY ROOST OF THE GREEN PEAFOWL

the best way was to force a dug-out straight into the vegetation which overhung the water, rearrange the foliage and lie flat, with glasses mounted like a brace of swivel guns on the gunwale. In such a position only a few venturesome leeches could reach one, and in this region any place where one could lie quiet for several hours with only a dozen leech visitors was a haven indeed.

I found that the Peafowl came regularly morning and evening to the river. In the morning, as I have related, often before the mists had cleared away, they would come silently, and would depart after a half-hour of leisurely preening and drinking. At five in the afternoon they would come again and often remain until dark. They would sometimes wade into the shallows, always holding their train high out of reach of the water, and more than once after a hot day I have seen them completely immerse their whole head in full enjoyment of the cool water.

With one family of four, an adult cock, two hens and a bird of the year, I became quite well acquainted, although the friendship was rather one-sided, for naturally they never knew they were under surveillance. One bird, and one alone, sometimes the cock, more rarely a hen, preceded the others, and it was fascinating to see the care with which every object in sight was scrutinized. The bird would leave the shelter of the bushes with slow, high steps, scanning the water, the sand-bar, the sky, the jungle in every direction. Clever indeed would the enemy have to be which could outwit the Peafowl scout at such a time. A hornbill or drongo crossing overhead would cause a moment's hesitation. A few minutes later the others appeared, more or less together, but with not nearly the super-alertness of the first. They evidently trusted the advance guard as to detection of general danger. One afternoon when the leader—the cock this time—turned without apparent reason and walked slowly back, night shut down without a single bird appearing.

By carefully going over the ground and watching at all hours I was able to map out with considerable accuracy the daily life of these four birds. After leaving the river in early morning, they went either to a big colony of termite mounds, or to a narrow valley shut in by steep limestone walls and filled with rotting vegetation. Twice they disappeared and fed in some unknown direction, but usually I could locate them in one or the other of these two places. No skill of woodcraft would have enabled me to do this if I had had to depend on sight alone, but I could locate the birds, after a little practice, at a considerable distance by the sound of scratching and the low conversational tones which they kept up. They fed for several hours, but toward noon they invariably worked slowly toward another sand-bar, farther down-river and almost wholly encircled by vegetation. In the course of my house-boat trip down the Pahang and up several of its lesser tributaries I found three such bars, all of which seemed to form favourite siesta places for Peafowl. To this particular bar three other birds came, but never mingled with the first four. I found a tree, strangely enough free from stinging ants and leeches, and on one of the larger branches I made an arboreal cache in which I hid myself, and, at the expense of frightfully cramped limbs, observed the birds at their noonday siesta several times in succession without being observed.

The birds are wise in this selection of a hidden sand-bar. As they are almost surrounded by foliage, they can see through it and easily detect approaching danger. For the same reason, combined with approximation to the river, they are as cool as the stifling heat will permit in this region. They may drink at will and there must be food of some kind in abundance, for the younger birds seemed never to tire of scratching up the gravel and picking in the shallows. But these were exceptions. The Peafowl as a whole became quiescent, and either slept or preened or stood with fixed sleepy expressions, half on guard from habit, but obeying the law of the country, which demands that almost all living creatures should rest during the midday heat.

On moonlight nights they are sometimes awake and calling for hours, and once I frightened one or more from some termite mounds in the glare of the full moon.

When they roost in dense jungle it is in such tall, dead trees as I have described, and these they reach not by a single upward flight, but by flying into a neighbouring tree and then to the top of another, from which point of vantage they reach their lofty perch. In the morning, however, from these same trees they descend with a single splendid flight; a flutter of wings at the start, then a long descending glide, ending in another rapid beating, and occasionally a very undignified half-tumble, as they encounter a branch or low bush before they reach the ground. Four or five birds will sometimes roost in a single tree, and Dr. Ridley reports as many as seven. But they seldom or never sleep close together, or side by side, except in the case of the young birds. In more open jungle Peafowl roost on lower trees, choosing, as far as my experience goes, always a tree whose trunk is smooth and without branches for some distance. This may be more than a coincidence, as such a selection must be of great value in guarding against the attack of small carnivores. Civets must be a constant menace to these big birds, and fortunate is it for them that their almost glandless body is practically devoid of odour. My one definite proof of an enemy was the half-devoured body of a cock, surrounded by leopard tracks. North-east of the Pahang, in the limestone den of some carnivore, I found old Peafowl feathers mixed with the fur and bones of mouse deer.

Let us pass finally straight down the Pahang to its mouth, and then, on the firm white coral sand, take a trip to the southward. Here, too, it is better to search for the birds in the evening or early morning. The fresh, cool sea-air blows salt across our faces, and the heavy boom of the monsoon breakers, which bar this coast to vessels for months at a time, is pounded out on the sand, sending curling sheets of foam far up toward us. Turning inland we pass through a grove of Casuarina trees, which gradually give way to vast stretches of tall coarse grass, deep rooted in the half-sandy soil. Concealing myself behind one of the trees, I begin my watch. For a long time nothing but the waving expanse of grass is visible. Then, without warning, something thin and black shoots into view far off. There is a crook at the top, and the general impression, as a Government Officer suggested, was of an umbrella handle. The glasses showed the head and neck of a Peacock; then a second and a third. Stalk as carefully as one may, the spot is always deserted when one reaches it, but by concealing oneself at the base of a tuft of grass the birds will often come quite near before they detect anything wrong.

Two old nests with remnants of eggshells were in the centre of grass plots, so like thousands of others that accident alone could lead to their discovery. Here the birds breed in safety, for even Malay praus will not live in the monsoon along this coast, and the unhealthiness keeps the human inhabitants down to small numbers.

FOOD OF THE GREEN PEAFOWL

In common with many other members of the Pheasant Family, the principal item of diet of Green Peafowl is white ants or termites. These omnipresent insects are scratched out of their turreted homes, or picked up as they march from place to place (as in the lower photograph). Even the large-headed, strong-jawed soldiers are no protection against the devastating beaks of peafowl, although I have shot these birds with ten or fifteen heads of termite soldiers fastened in their mouth and throat, the jaws of the insects being firmly fixed in death in the lateral tissues.

FEEDING GROUND AND PRINCIPAL FOOD OF THE GREEN PEAFOWL

In the Malay States the Peacock is considered an unclean bird and is not eaten by the Mohammadans. They deem its strutting habits as of ill repute, and also believe that it guided the serpent to the Tree of Knowledge in the Garden of Eden, and hence to be under an eternal curse. The Malays of other faiths are not troubled with these beliefs and readily eat the flesh. That of the young birds is delicious, but the adult cocks are unbelievably tough. They have a proverb "like a peacock displaying in the jungle," signifying that its beauties are being wasted.

Both in Java and Burma there is a widespread belief that it is very dangerous to have Peafowl near young children, as the birds are fond of swallowing precious stones and are deceived by the eyes of the children and endeavour to peck them out.

The Green Peafowl ranges over much of Java, and I observed it both in the mountains and not far from the coast. It never occurs directly on the coastal lowlands, however. I had been shooting and studying Javan junglefowl on the north shore near the eastern end of the island for some time before I went into the interior. The high rugged limestone ridges which extend at right angles to the coast-line converge in some cases as they run inland, and form more or less narrow valleys. Such an one I followed for many miles, and found it steadily rising and becoming more arid, and this proved to be the favourite home of the Peafowl. In character of vegetation it was almost the counterpart of South Ceylon, and the abundance of Peafowl and junglefowl in each case made the comparison all the more striking.

The ground was covered with short, parched grass, while dotted everywhere were small clumps of cockspur, thorn acacias and other low shrubs, the orange-flowered lantana predominating. Graceful tree acacias, ten or twelve feet in height, came next in point of numbers. The food of both junglefowl and Peafowl is a huckleberry-like fruit, edible for man, growing on a low briary shrub, which the natives call *doro*. The berries are pale red, having a large stone and a rather flat taste. The crops of the birds are invariably crammed with them. A young forest of teak was growing lustily in one part of the valley watered by a small meandering stream, but more interesting were the few isolated cotton trees, bare except for pods and a few red blossoms. These splendid trees reached high above all the vegetation of the region, and were invariably the roosting-places of the Peafowl, each providing a splendid look-out over all the surrounding country.

As a whole, the country is colourless; dry and dusty hues prevail, with only the tiny specks of red and orange lantana blossoms scattered over their aromatic foliage to brighten the scene. A few swallow-shrikes flapped or soared about, an oriole blazed its way across the sky, and doves, brown as the foliage, ran quickly about. Here and there a dry land kingfisher perched mournfully, on the look-out for insects. And here, in the heat, Peafowl rested under the acacias and waited for the sun to leave the zenith, so they could feed in comfort, plucking berries or scratching among the dead roots of the grass for grubs and other insects.

In the uplands of the interior of the island, the Peafowl nest among the jungle undergrowth, sometimes not far away from the coffee plantations. Where not disturbed, they frequently enter the cultivated areas morning and evening, but seldom do much damage. Whenever obtainable, white ants form their chief animal diet, and they will leave all other sources of food untouched when these termites are to be had in abundance. In the crops of Peafowl in Java, besides berries and white ants, I found grass-seeds, peppers, flower petals, crickets, grasshoppers and small moths.

The birds are becoming rarer in Java, and before many years, as the plantations increase, they will become extinct. Pythons are said to kill them, although I have only the assertion of several gentlemen in different parts of the island as proof.

A reliable observer in Java reported to me that he had once witnessed three cocks showing off simultaneously to a pair of hens. Several people testified to the severe battles which take place during the season of courtship. One man was able to walk up to within a few yards of the two combatants before their alarm overcame their pugilistic emotions. The same gentleman found a dead bird which had been pecked and spurred in a frightful manner, the breast torn open and an eye destroyed, the evidence all pointing to a duel with another bird. On another occasion in mid-September he found five recently hatched chicks in a dry swamp, with no signs of the parent about. But a half-hour later all had disappeared, so the hen must have come silently and led them away.

In Java, Peafowl are in perfect plumage in June and July and August, and it is during this period at the beginning of the east monsoon that the courtship and fighting take place. In the north, in Burma, the breeding season is about the same. The birds moult in August in the north, in October and November in Java, but there is much irregularity. Newly hatched chicks have been found from August to December in southern Burma. At Chang-lung, on the Salwin River, a female on March 21st had partly-developed eggs in the ovary.

In the Malay States I found only old nests with the remnants of eggshells, but in Java I had the good luck to discover a nest with the hen sitting. This contained five eggs about half incubated. The nest was on the ground between two trees in light jungle not very far from a coffee plantation. It had a secure protection from all ordinary surprise, as the trees grew from a narrow ledge which projected abruptly from the mountain slope, and the rock wall back of it made it necessary for the bird to look for danger only from in front down the hill-side. The bird flew, when she saw she was discovered, with loud screams which drew answering calls from several distant Peafowl.

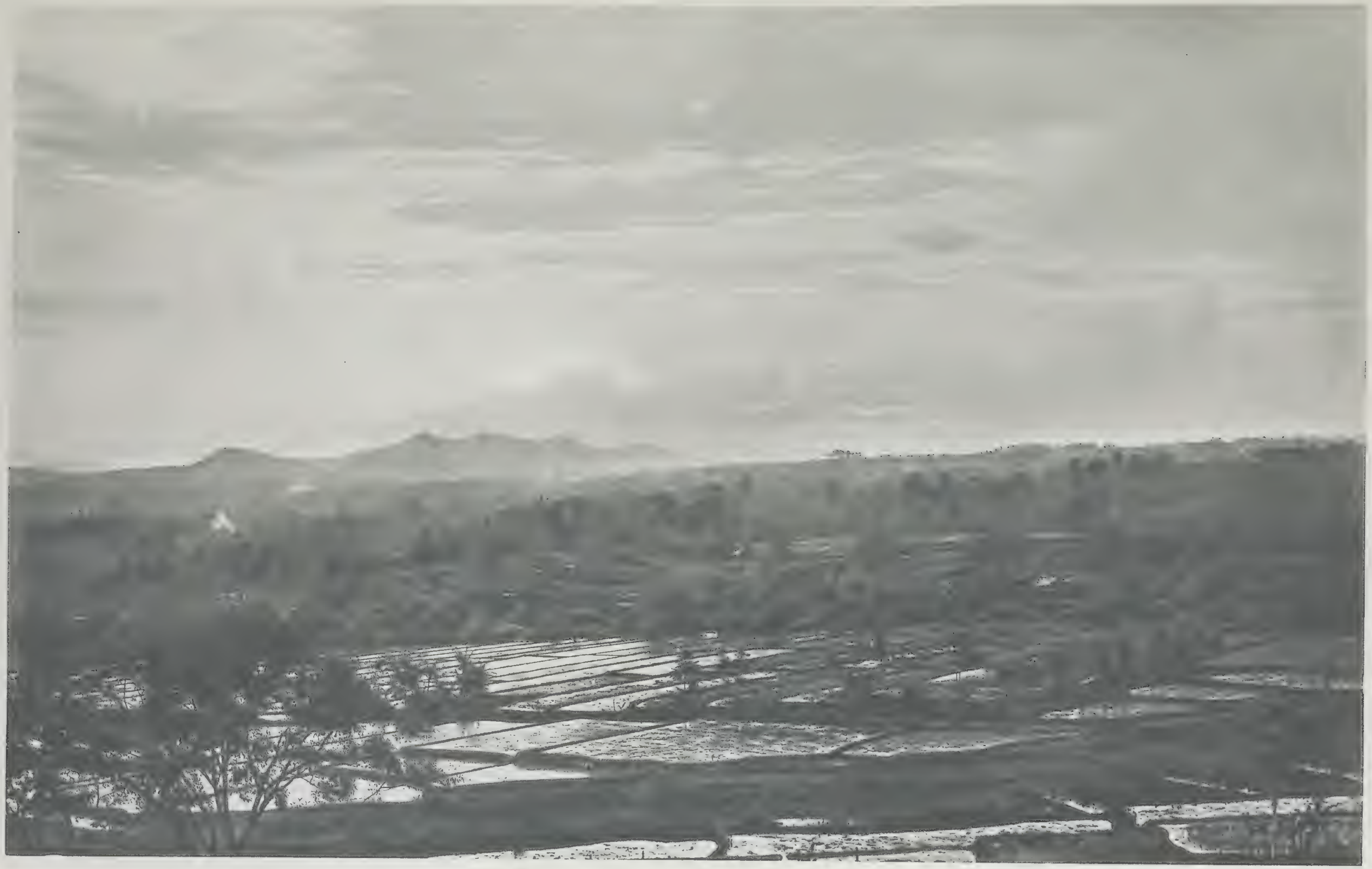
As many as six chicks have been observed in Pahang following a single hen, but two seems to be the number ultimately reared to maturity, both on the coast and in the interior. Several Dutch observers, one of whom made a collection of eggs, had found nests with four, five and six eggs, all of which were complete sets. In captivity the Green Peafowl has been known to deposit as many as eight in a single laying.

The eggs are hardly to be distinguished from those of the Indian bird, varying from dull white to rich dark cream. I have never seen a spotted one. The extremes in size are 70 mm. by 87 in length, and 52 by 55 in breadth, the average being 78 by 53 mm.

Green Peafowl are much more delicate than the other species, and not nearly so amenable to domestication. They breed less readily, but the chicks seem to be easily reared. In the case of eighteen individuals which have lived in the London Zoo, the average length of life was thirteen months, while one bird lived almost four years.

JAVAN LOWLANDS FROM A PEAFOWL ROOST

In the lowlands of this island peafowl inhabit narrow valleys between limestone ridges, grassy in character, with thorny acacias and occasional cotton trees on which they roost. Here they feed principally on small red berries.



JAVAN HOME OF THE GREEN PEAFOWL

DETAILED DESCRIPTION

Adult Male.—Most of the face is bare of feathers and brightly coloured. The blue forms a broad zone around the eye, beginning as bluish white immediately below the nostrils and extending backward above and below the greenish lores, and completely around the eyes.

The lower part of the face, cheeks and side head are chrome yellow, bordering the blue area below and posteriorly, and completely encircling the ear openings. The bill is dark brownish horn colour, palest at base, the iris rich brownish hazel. A tall crest, slanted slightly forward, rises from the crown, composed of stiff, straight feathers, vaned narrowly but completly to their bases.

The top of the head, from the forehead to the nape, the lores, chin and throat are bright metallic bluish green, shot with purplish and steel blue. Neck, upper breast and mantle golden bronze, with the centres of the feathers deep purple or purplish blue, bordered with green. These blue centres are concealed on the neck, but appear on the back, where they alter the entire pattern, and here the feathers are fringed with greenish black. The remainder of the back is glistening emerald green, with centres of bronze and fringes of black.

The breast feathers are bronze, with centres of green, and showing bluish-green fringes; the rest of the ventral surface becoming dull green, fading to brownish black on the mid-abdomen and under tail-coverts. The lesser wing-coverts are bronze green, with typically blue centres and black margins. Median coverts metallic blue green, changing to coppery bronze on the innermost ones. Greater coverts and primaries chestnut with darker shafts and tips; the secondaries dark brown, but showing an approximation to the body colours in a metallic green sheen on the visible portions. Tail feathers dark brown, sometimes almost black, mottled irregularly with lighter along the quills. The enormous upper tail-coverts which compose the train are in general similar to those of the Indian Peacock. Legs and feet greyish black. Dimensions: Length, exclusive of train, 950 to 1,180 mm.; total length, 1,600 to 2,000, with one record of 2,250; expanse, about 1,400; bill from nostril, 19; wing, 418 to 478; tail, 375 to 444; tarsus, 125 to 149; middle toe and claw, 84 mm. Weight, 8 to 10¾ lbs.

Adult Female.—Resembles the male in many ways, but completely lacks the elongated train, and has the entire back and rump brownish black, barred irregularly and mottled with buff. On the mantle there is often a sheen of metallic green. The bronze colour and the black fringes of the ventral plumage are less clear and distinct than in the male, while the flight feathers and greater coverts are usually mottled on the outer webs. The upper tail-coverts do not project beyond the tail and are mottled with brown. The tail itself is dark brown with paler bars. The female averages a little smaller in general dimensions than the male. The eye is dark hazel, and the facial colours are less brilliant than in the cock, the blue and the yellow being less sharply defined. The bill is paler, and the legs and feet greyish black.

Young Male.—The plumage is very similar to that of the adult female, but the lower back feathers are distinctly greenish bronze, and the short upper tail-coverts are golden green with bronze tips. The change to maturity is in general from bronze to green. In a three-quarters grown bird which I shot in Pahang the iris was dark hazel, the upper facial skin pale purplish blue, becoming greenish above and below the ear-openings, shading below into yellowish.

SYNONYMY

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MOUNTAIN HAUNTS OF THE GREEN PEAFOWL IN JAVA

The most picturesque place inhabited by these birds is the mountains of central Java. Never will I forget an early morning when, from the tent door, I looked out across a magnificent gorge to a high, misty waterfall beyond. Small birds of many species had flown from their roosts in small side gorges down to the stream for their early morning drink. At last came the wholly unexpected sight of three Green Peafowl, two with long trains, shooting like meteors across the rainbowed depths. They appeared, glowed like opals in the low-slanted rays, and vanished.

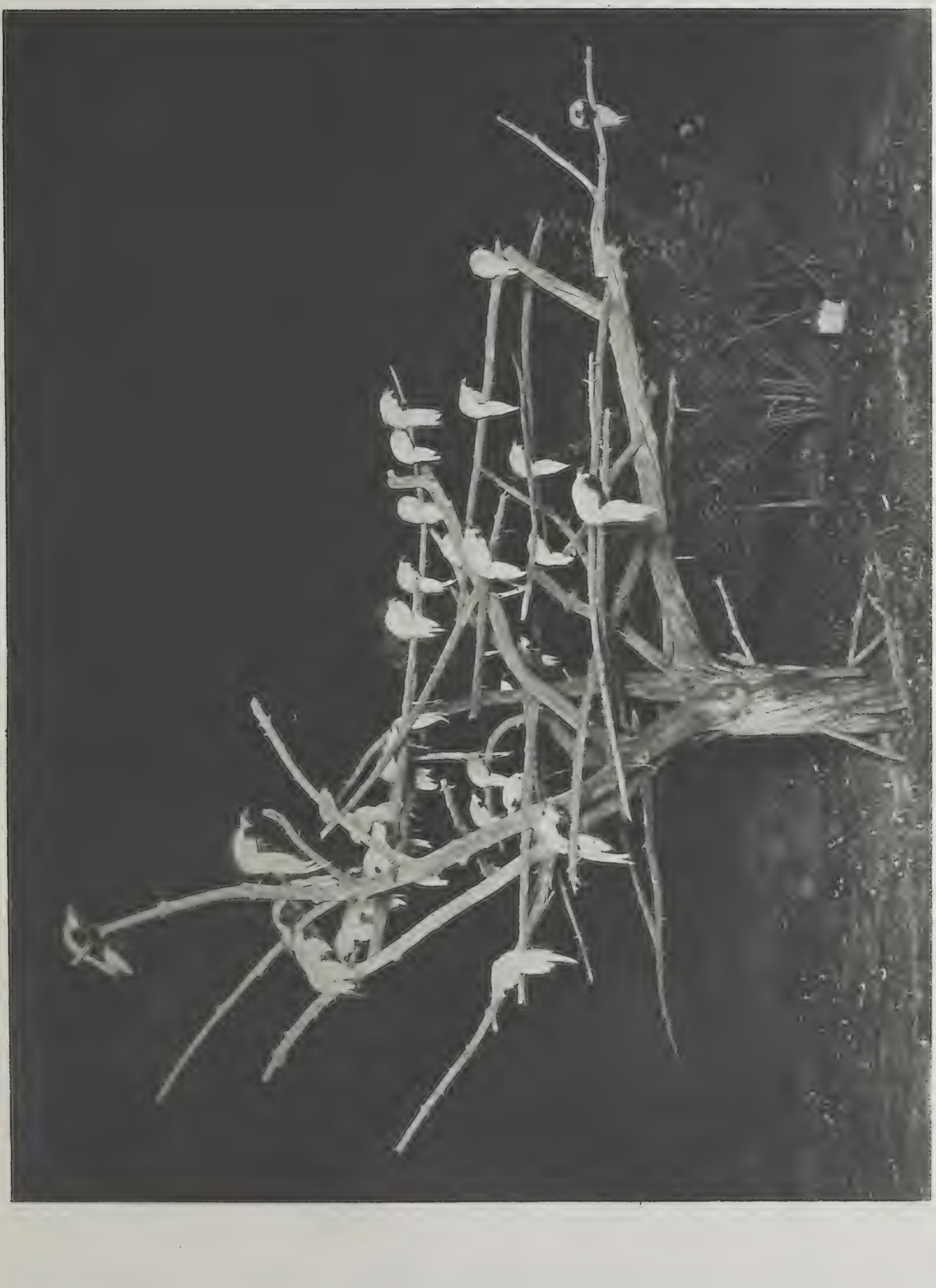
MOUNTAIN HAUNTS OF THE GREEN PEAFOWL IN JAVA

THE CARE OF PHEASANTS IN CAPTIVITY

SILVER PHEASANTS ROOSTING

MIDNIGHT flashlight of Silver Pheasants roosting in a tree in the Faircourt Aviaries of Colonel Anthony R. Kuser, at Bernardsville, New Jersey.

PHOTOGRAVURE PLATE [illegible]



MIDNIGHT FLASHLIGHT OF SILVER PHEASANTS ROOSTING IN COLONEL ANTHONY R. KUSER'S FAIRCOURT AVIARIES, NEW JERSEY.

THE CARE OF PHEASANTS IN CAPTIVITY

Under the heading of Captivity in the accounts of the various groups of pheasants in the present Monograph, I have in many cases given brief directions as to care, feeding and breeding. In this final chapter I have summarized this information, seeking to include only the more salient, vital facts necessary to the successful collecting, housing, feeding and breeding of these splendid birds. In this I have received important aid from my colleague, Mr. Lee S. Crandall, my successor as Curator of Birds in the New York Zoological Park, who has gone over the field carefully and collated and sifted the data, both as presented in the more reliable books and as worked out at first hand in the Zoological Park.

At the present time pheasants are reared in every civilized country, and a host of books and pamphlets concerning their care and breeding are to be had in many languages. These birds are so homogeneous in general habits that directions for the rearing and feeding of one species suffices for almost all.

Pheasants in captivity fall naturally into two groups—those which are more or less closely confined in cages and aviaries, and those which are kept and propagated in semi-freedom, for sporting purposes. The treatment of the birds of these groups varies considerably, and therefore will be considered here under separate heads.

AVIARY PHEASANTS

All of the species of pheasants which have reached civilization alive with the exception of the members of the genus *Ithagenes*, have thriven to some degree in confinement. Some, of course, seem more adaptable than others, and have bred and multiplied where their less versatile relatives have been content with merely living. Many of the latter, however, are of such rarity in captivity that their failure to breed may often be attributable to lack of mates or the absence of suitable surroundings, and there is no reason for doubting that any species of pheasant which will live in captivity can be induced to breed if properly treated.

AVIARIES

With the exception of the Argus, Firebacks and the more delicate of the Peacock Pheasants, all of the species are able to endure considerable cold, especially if provided with some shelter. Dampness is the greatest enemy of the pheasant in confinement. If the health of the birds is to be maintained, undue exposure to this condition must be avoided.

There are two classes of structures suitable for the aviary pheasant—the more pretentious permanent building with runs attached, and single enclosures, in which some shelter is usually provided. These may be either of the movable or permanent type—usually they are of the latter.

Pheasants will do well in the more formal aviary, provided the corrals are of a size sufficient to provide exercise and shelter for the inmates, and to prevent the soil being contaminated. In selecting a site for the aviary, due consideration must be had for drainage, soil, direction of the most frequent storms, shade, etc. Protection from the most severe storms of winter may often be provided on a hillside by a thick clump of trees and shrubbery. The position selected must be well drained and never by any means at the bottom of a slope where water naturally collects. The exposure should be toward the south or south-east if possible, thus providing the maximum of sunshine during the short days of winter and some protection from the cold winds of the north.

Shade is important, and it is always desirable to erect the building beneath large trees which will serve to keep off the heating rays of the sun.

Clayey soil is not suitable for gallinaceous birds, as it retains moisture. Sandy soil is what is required, as it provides perfect drainage and is easily turned up if necessary.

Probably the most satisfactory form of private building is that in use at Colonel Anthony R. Kuser's estate at Bernardsville, New Jersey. This house is of wood, and circular in form, its diameter being forty feet. The centre is devoted to the storage of grain and supplies, the outer portion being divided into twenty-three pens for the shelter of the birds. From the house radiate commodious runs, sixty feet in length, well sodded and set with pampas grass and other natural shelter. Around the whole is a path, outside of which is the outer wall of wire. The entire top is covered, so that the path performs the double function of accommodating keeper and visitors and protecting the birds from fright from the outside.

Usually two, and not more than three, birds are kept in each enclosure, and as the ground is spaded and disinfected each year or two, it does not become "sour."

The type of aviary usual in public parks is well exemplified by the structure in use in the New York Zoological Park. This building was devised by myself upon a rather original plan, and has proved satisfactory in every way. It is a long building, corridor-like in structure, extending north and south, with twenty enclosures for the birds, opening into outdoor runways, these latter measuring eight by twenty-four feet and all facing the east. At each end of the building is a loft and a large room heated by a stove, and affording space for thirty-two additional inside cages, all of which connect with small, outside, wire-covered runways. This aviary is in every way a double one, having a roomy dove-cote above each of the pheasant enclosures, affording accommodation for a collection of birds of flight, and of perching habits, and interfering in no way with the more terrestrial pheasants. By this general arrangement, all the birds are given the choice of sunlight, outdoor shade, indoor shade and close warm shelter.

The rat question was kept in mind throughout the planning of this structure, as this probably is the source of greatest trouble and danger to the pheasant fancier, whether in a zoological park or a private estate. All the floors of the building and runways, and the copings dividing the latter, are of concrete. Fitted tightly upon the copings are the frames of the wire, which throughout is of three-quarters inch mesh. Thus the rats are absolutely excluded.

The indoor pheasant enclosures measure six by eight feet, by six feet high, and each is provided with two perches. A small door admits the birds from the outdoor run, while a large sliding window provides light and warmth in winter, and slides out of the way, opening the entire front, in summer.

The pugnacity of male pheasants is well known, and must be guarded against. A sheet-iron partition two feet in height takes the place of wire upon the copings between the runs, but not in front, so that the cocks cannot see one another, and all chances of pecking and fighting through the partition wire is avoided.

In the centre of each run a circular hole is cut down through the concrete, thoroughly wired and filled with earth, in which some shade-giving, ornamental shrub is planted. Among others, Mountain Laurel, Silky Cornel, Hornbeam, Weigelia, Bridal Wreath and Black Haw have proved very successful, rapidly filling the central part of the runway, and adding the colour of their blossoms to the brilliant hues of the pheasants themselves. The smaller birds, doves and passerine song-birds, nest freely among the branches of the shrubs. Sand is the best material for the flooring both of the runs and the inside enclosures. In summer a depth of three or four inches may be maintained. In winter, however, in such a climate as New York, a thin, scattered layer in the outdoor runways is best. At each thaw this can rapidly be swept together and removed and a fresh layer thrown down. If more is provided it soon becomes foul, and freezing over the drains, causes the flooding of the run. Indoors, a large box of gravel and another of ashes or sand for dust baths are provided.

While aviaries of this sort are suitable for the exhibition of birds in zoological parks, the conditions they provide are not conducive to breeding. For this purpose the runs should be considerably larger, and the ground not concreted, but well sodded and provided with an abundance of low thick shrubbery. It is an excellent plan to form gravel paths around the edges of the run, if it is to be sodded, as it is here that the birds do much running to and fro, soon beating down the grass in an unsightly manner. It is also a good idea to place in a secluded corner a low box containing a mixture of wood ashes and road dirt, in which the birds may dust themselves.

Where the pheasants are in danger of sudden fright by dogs or other intruders, it is well to place strong twine netting about a foot below the wire top of the yard. The first move of a startled pheasant is to dash upward, and if wire-netting forms the only barrier, mutilated heads are certain to result.

Wood seems to be the most suitable material for the construction of pheasant houses. Concrete is always damp and cold in winter and exceedingly hot in summer, if it receives the direct rays of the sun for long periods.

Of course wooden buildings are apt to be more or less infested with rats, and these vermin must be excluded at all costs. In the case of Colonel Kuser's aviary, the wire forming the outer wall is run into the ground for a distance of two feet, and then outward at right angles for the same distance, forming an effective barrier against all burrowers. Buildings not surrounded by runs can be protected by attaching wire to the exposed portions and running it into the ground as above described. If the wires forming the outer walls of the runs are similarly treated, the protection afforded will be complete. When the wire used is not of mesh sufficiently fine for the exclusion of rats, a length of finer mesh, two feet in width, can be run around the bottom, topped by a right-angle overhang of sheet metal, which will prevent the passage of the rodents. In the case of formal buildings, it is often possible to let the foundations extend into the ground for a considerable distance, below which rats will not burrow.

The more simple type of aviary, which is usually seen on game farms and in most cases where a few pheasants only are kept, can be erected at a very small expense. The run should be made as large as circumstances will permit, and should be made as nearly vermin-proof as possible. It should be well sodded and provided with plenty of shelter, as in the more pretentious but not more efficacious structure.

A low, open-fronted shed, placed with the back to the point of origin of the most severe storms, will be found quite sufficient shelter for the birds. Indeed it is often difficult to get them to enter the building provided. In spite of all the apparent comfort offered by a sheltered perch, many pheasants prefer sleeping on the ground, tucking themselves away in corners and under the shrubbery, and enduring the most severe weather without injury or discomfort.

SECURING THE BIRDS

After the construction of the aviaries, the next step is to secure suitable inmates. While the English Ring-necks are the cheapest birds attainable, the Goldens and Silvers are much better suited to the limitations of the tyro, and the price asked for them is not excessive. These birds are easily tamed, are very hardy and certainly not the least beautiful of the pheasant family. Ring-necks, while easily kept and bred, are naturally much wilder, rarely become tame and do not possess the pleasing beauty of many others. After a start has been made, and much-needed experience gained, the amateur pheasant keeper may take up many other expensive, but no less hardy, species, perhaps in the order named: Lady Amherst, Reeves, the various Kaleege, and Silver Pheasants, Elliots, Eared, the Impeyans, Tragopans, Peacock Pheasants, and finally, the more delicate Argus and Firebacks.

Pheasants are sold by numerous dealers, and examination of periodicals devoted to country life will disclose their addresses. The prices asked are fairly well standardized as a rule, and do not vary greatly in the more common species. With the rarer sorts, however, the prices are less stable, as the supply fluctuates according to conditions in their native country and the many vicissitudes to which they are subjected before reaching their final destination. The cheapest birds are the English Ring-necks, which in America usually sell at $6.00 (or 24*s.*) a pair, wholesale; and prices range upward to about $300 (or £60), which is the sum usually asked in Europe for a pair of Argus, on the rare occasions when they are obtainable.

It is customary to buy pheasants in pairs, and prices are usually quoted on this basis. In certain species, however, the male will mate with more than one female, and in these cases it is well to secure several hens. When an extra female is desired, it is customary for the dealer to ask sixty per cent. of the price of the pair. Even with the birds which are strictly monogamous, it is well to secure at least two females, as the males sometimes become murderous during the breeding season and will relentlessly pursue a single female and kill her if possible. If more than one hen is present, his attention is apt to be diverted from one to the other. Suitable hiding-places, such as clumps of brush, should be provided, under which the unfortunate bird may rest if too hotly pursued.

Ring-neck cocks, at any rate, will fertilize the eggs of four or five females, and this is true, though perhaps to a less degree, of most of the members of the genus *Phasianus*. Goldens will mate with three or four hens, and Reeves, Lady Amhersts and Silvers with at least two. Some other species will sometimes accept more than one mate, but in most cases, and sometimes even with those mentioned above, it will be found that the proportion of fertile eggs depends entirely on the number laid by the favourite, those deposited by the others invariably proving infertile.

Little work has been done on this point, but it seems probable that much of the predominance of infertile eggs in "fancy" pheasants is due simply to the monogamous nature of the species, as of individual males. Several species, such as the Argus, Impeyans, Peacock Pheasants, and probably also the Firebacks, are unvaryingly monogamous.

Male and female should never be confined in a small place together, especially during the breeding season, as trouble is very apt to occur.

It certainly is not safe to allow more than one male in a small pen where females are present, as the cocks are very pugnacious and certain to injure each other, particularly during the spring. During the balance of the year the sexes of the less quarrelsome species may possibly be allowed to mingle, if the run is very large and provided with an abundance of close cover. Ring-necks seem very docile in this respect, and several hundreds of birds of both sexes will spend the autumn and winter together in perfect amity, and even go through the breeding season with very little quarrelling, if in sufficiently roomy quarters.

Golden and Silver males will agree even in rather small aviaries, if no females are present, and a group of fifty males of these species running together on fresh sod presents a lovely sight. If the cage is too small, some fighting may result, and feather eating almost certainly. In some cases this vice is carried to extremes, and a flock of erstwhile handsome birds will have hardly a whole feather amongst them. If not crowded, however, there is no trouble of any kind. Ring-neck cocks, and possibly also some others, will do well under similar circumstances.

SHIPPING

Great care must be taken in shipping pheasants, as they are very nervous and easily frightened. The box must be sufficiently large to allow the cock to turn without ruining his tail, and just high enough to permit the birds to stand upright. The top must be padded, for doing which there are two excellent methods. One is to stretch burlap tightly across the box about two inches below the slats which form the top, leaving a space between. The burlap thus forms an effective cushion, and the pheasant's head cannot come in contact with the wood. The other and more common expedient is to fasten burlap rather loosely directly below the slats, and fill the slack between with straw.

If the birds are going on a mere over-night journey no water is necessary, and they are safer packed in a tight box, with a few holes bored near the top for ventilation. For longer journeys it is customary to have one side slatted, the intervening apertures being so narrow as to prevent the birds from getting their heads out, thus saving them from possible injury. Some shippers leave spaces through which the pheasants may reach the food and water placed in vessels fastened outside the cage. It is much better, however, to so arrange the food dishes that everything is inside. A metal trough for water and a wooden one for grain, which just fit into holes cut into the box, and fastened with pins, are very satisfactory. It is thus possible to provide for the wants of the inmates without opening the cage door, which is a great advantage.

The front should always be provided with a curtain of burlap or other material, which will serve to darken the cage during transit to railway stations, etc., and so keep the birds more quiet and protect them from the prying eyes of the curious. Cock and hen must be placed in separate compartments, for to confine both birds in a single small shipping-box is to court almost certain disaster. Many a hen pheasant shipped with her mate in the same compartment has reached her destination with her head scalped to the bone and the feathers stripped from neck, shoulders and back. Ring-necks are not so vicious in this respect as most others, but even they are always unsafe. The bottom of the box should be covered with clean straw.

Pheasants are rather difficult birds to handle, and care must be exercised not to break the delicate bones of the legs and wings. Innately wild, the bird struggles frantically when first taken in the hands, and will renew its efforts to escape at the least indication of relaxation on the part of the holder. A pheasant must be taken in both hands, one pressed firmly at each side of the body, holding wing and leg tightly. The legs alone must never be seized, as broken bones are almost certain to result. If the head of the bird be placed under the holder's coat, or covered with a cloth, its struggles will be much less severe.

FEEDING

Once the birds have arrived and have been installed in their new home, the question of food arises. Much has been written on this point, a great deal of disagreement existing, and it probably will continue to vex the ranks of future aviculturists as long as pheasants are kept. All sorts of rations and diets are advocated with great earnestness by their adherents, many pursuing fads to extremes. The novice, however, will find that pheasants thrive best on plain feeding and little of it, and he will do well to avoid too much fussiness.

The main food of adult pheasants of all species in captivity consists of grains of various sorts, such as wheat, buckweat, dari or kaffir corn, small beans, peas and lentils. Unfortunately, the standard food in America for all sorts of grain-eating birds is corn or maize. The reason, no doubt, is that this grain is abundant and cheaper than most others. It is a dangerous food and should be used only in small quantities and with great caution. It induces extreme deposition of fat, and in a very short time will change a fine, vigorous bird to a mere lump of feathered sluggishness. A fat hen pheasant will not lay, nor will a cock in a similar condition fertilize the eggs laid by his mates. The liver soon becomes enlarged, then diseased and the days of the bird are numbered. Where pheasants are on large ranges, they may be given small quantities of corn with safety, and in the winter months a handful two or three times weekly will help ward off the cold. But during the warm months, aviary pheasants certainly are better off without it.

The important point in grain-feeding is to allow the birds just what they will eat and no more. Some persons never acquire the ability to judge this amount with any reasonable degree of accuracy, but others are able to do so with a little practice. These details point the difference between a good gamekeeper and a poor one.

Some breeders feed their birds from stationary lappens, particularly when on range. This system, however, certainly is not to be recommended, as over-fed pheasants soon become indolent and sluggish, with disastrous results.

Pheasants will be found to do well on a simple grain feed once daily, with some soft mixture substituted two or three times weekly. Many breeders advocate feeding twice daily—a morning meal of grain with a mash in the evening. If this method is followed, both meals must be very scant, or the birds will soon become too fat.

Spratt's Game Food makes a good and convenient soft food. It must be well scalded and allowed to absorb just enough water to swell it, without becoming too soft.

During the laying season it is well to give the breeding birds a daily feed of mash. Equal parts of barley meal, bran and alfalfa make a good combination, to which may be added a small quantity of corn meal in the mixture—but it has all of the harmful tendencies of the white grain, and must be used sparingly if at all. Alfalfa meal is a wonderfully good food and is of great value in feeding pheasants. It should be thoroughly scalded and allowed to stand for a while before mixing. It then swells considerably and is at its best.

Crissel must not be soaked for too long a time before mixing, as it soon begins to decompose, once it has become thoroughly wet. It must be given sparingly at first, as it will scour the birds until they are accustomed to it. All mashes should be scalded, and given in a crumbly state. The proper consistency is easily obtained after very little experience in mixing.

Green food is essential to pheasants at all times. During the breeding season this is generally supplied by the turf on which the cage is placed. If this is not the case, finely chopped grass, chickweed, groundsel, chives, lettuce, cabbage, etc. may be furnished. Grass should always be finely cut, as the birds will swallow very long blades, if given, which are apt to become impacted in the crop. For the winter months most breeders put aside a store of cabbage, which will last the birds until spring. Mangels, turnips and similar vegetables are relished by the birds and make valuable additions to their fare.

Good sharp grit must be provided at all times. Fine quartz is excellent for purely grinding purposes. Pulverized oyster shells soon wear smooth, and are therefore of little value for crushing food, but they contain a very large percentage of easily-assimilated lime, and therefore should be constantly before the birds. Fine charcoal is an excellent purifier and should be used with the grit. Special boxes are sold for charcoal and grit, and any amateur carpenter can easily construct his own.

Water is a far more important item than is supposed by many. It should never be placed in the direct rays of the sun and should be changed at least once daily. The receptacle must be thoroughly cleaned and the lining of algae or "scum" which accumulates removed.

BREEDING

Only the strongest and most vigorous birds should be chosen when selecting the breeders. Most rearers consider that two-year-old females lay the most eggs and produce the healthiest young. Of course, hens three years old or even more will do well as breeders, and so will yearlings, but it seems probable that two-year-olds will average better.

The females of most of the species which are likely to be found in captivity lay during their second summer, that is, when they are a year old, although they generally deposit fewer eggs than more fully adult birds. Late hatched or poorly developed individuals often will not lay at all until two years old.

In mating pheasants, where one has a choice of birds it is customary to mate young cocks to old hens and vice versa. This is a common practice among breeders of live-stock of all kinds, and probably is justified by results, although no thorough investigation of the matter seems to have been made. At any rate, the cock must be a strong and vigorous bird, especially if he is to be mated with more than one female.

Pheasants lay during the spring months, the earliest usually being the Elliot, which often commences early in March. Some species, such as the Peacock Pheasants, lay but two eggs, while the common Ring-neck often lays forty or more. This is doubtless due to long cultivation in confinement, wild birds laying much smaller clutches. The daily collecting of the eggs also serves as a stimulus to further laying.

Most females seem to lay late in the evening, rather than early in the morning, as is the habit of domestic fowls. This fact often puzzles the tyro, who expects the birds to follow the custom of their more domestic relatives. Nests are not provided for pheasants as with domestic poultry. If plenty of shrubbery is provided, the hen will scoop out a hollow in some secluded corner, where her eggs will be deposited. If a suitable nesting-place cannot be found, the eggs are dropped about promiscuously. The eggs should be searched for and removed daily, although it is well to place a "dummy" in the nest to encourage the bird's return. If eggs are allowed to lie about, they are very apt to be broken, thus leading to the vicious habit of egg-eating. When birds in close confinement once form this habit it seems impossible to break it. The instant the female has deposited an egg, her fellows, and often she herself, will break and eat it. Cocks are more apt than hens to form this habit. Many plans have been tried to prevent egg-eating, but none as yet has proved successful. Eggshells have been filled with every manner of nauseous mess—carbon disulphide, ammonia, mustard, etc.—to no effect. Many even go so far as to trim the bills of the offending birds until they are too tender for egg-breaking, but this cure is as bad as the habit. If china eggs are scattered about, they may divert attention from the real one until it can be collected. The safest method is to confine the hen which is expected to lay in a small, dark coop towards evening, when the egg can generally be secured.

After collection, the eggs should be stored in a cool, dry place, carefully packed in bran, sawdust or some other loose material. They should be set on end (which one is immaterial) and turned daily. When treated thus, they will hatch perfectly after two or even three weeks, and occasionally even longer periods. Most breeders, however, prefer not to keep eggs for longer than two weeks before commencing incubation.

INCUBATION

The hen pheasant will often evince a desire to incubate, and in such cases, where it is convenient, it is well to allow her to do so. She will rear the young quite as well as a domestic hen, and possibly better. It will usually be safe to allow the cock to share the run with mother and young, as he will not harm the chicks.

In most cases, however, the hen will not sit, being so frequently disturbed by egg collectors. In rearing on a large scale it is not practical to use pheasant hens for rearing, as they are wild and difficult to control, and would require a great deal of ground if young are to be reared in large numbers. It is customary, therefore, to employ foster-mothers for hatching the eggs and rearing the chicks.

Incubators have sometimes been advocated, but no one, for some reason, seems to have met with much success with this purely artificial method. Incubators are a useful adjunct, however, during the hatching season. Where heavy domestic hens are used, they are very apt to crush the chicks while in the nest. It is an excellent expedient, therefore, to remove the eggs a day or two before they are due to hatch and place them in an incubator, giving the hen a clutch of infertile ones to keep her busy until the chicks are dry and strong, when they are given to the foster-mother.

Domestic hens have so far proved the best practical rearers of pheasant chicks. In selecting suitable birds, size and quietness should receive much consideration. The hens should be small and steady, and clean-legged if possible. For rearing the more delicate species, Silkies are without doubt the very best, closely followed by Silky crosses and Cochin Bantams, the latter being rather handicapped by heavy leg feathering. For the hardier pheasants, small birds of any quiet breed will do very well. It is not customary to keep a large supply of hens on hand, the necessary birds usually being secured from neighbouring farms, as required, by renting or outright purchase. Some game farms, however, keep their own hens, preserving the eggs laid in the spring in silicate, and using them for the young pheasants later on. This system certainly should commend itself to those who have sufficient room for allowing it.

Many methods have been devised for providing nesting accommodation for the foster-mothers. The one most popular until very recently was to erect a substantial house, or adapt to the purpose a barn, usually with no floor. The nesting-boxes, each about two feet cube, were ranged side by side about the walls, entirely enclosed, with a large door opening toward the front, and perforated for ventilation. There was no bottom in the boxes, the nest being formed on the bare ground. In other cases the nests were built one above the other, in several tiers. At breeding time hens widely separated were liberated simultaneously, and put back to make room for others, thus preventing fighting and the breaking of eggs. A better plan was to provide a peg, with a short cord and loop, before each nest. To this each hen was fastened to eat and drink, the attendant being able to replace the first ones out as soon as the last one was tied. There are many drawbacks to this system, besides the labour involved, and a better plan is now followed by most breeders, at least in America. An individual coop, two or three feet square, is provided for each hen. The coop has a slanting roof, which is hinged, but no bottom. To each is attached a covered wire run about three feet long, which communicates with the coop by means of a small door. Holes are bored around the box below the overhang of the roof to provide ventilation. The nest is formed on the ground, of straw.

The hen should be tried on a few china or other eggs until she is thoroughly steady, before she is trusted with the eggs she is expected to hatch. Whoever cares for the foster-mothers must be a person without nerves and with infinite patience, for nothing is more provoking than a broody hen. Any quick movement will excite her still further if she is at all uneasy, and may lead to all sorts of trouble. After the hen is properly settled on her nest, she should be let out in her run to feed, and if she does not return in a few moments should be induced to do so. This must be repeated daily, and the hen re-fastened in the coop, so that she will not remain off too long.

While this system causes some initial expense, this item is not so great as might be imagined, and the amount of time and labour required is much less, while fighting and broken eggs are entirely avoided. When hens in adjoining nests in a building are being fed, those not taken out are apt to become impatient before their turn comes, and trample about on the eggs, often breaking many in their efforts to secure their meal. Individual coops avoid all such troubles, allow the hen to have a free, though limited, run for at least a few moments daily, and moisture for the eggs is provided through the ground, thus saving the necessity for dampening them directly.

In setting the eggs, it is well to wait until a large number have accumulated, so that they may be started at the same time. This will prove a great convenience when the chicks are removed to the rearing ground. Where young pheasants on the same grounds are of varying ages and sizes, the smaller birds are more or less jostled by the larger ones, and chicks are constantly being killed by hens owning broods of different age. Also, infertile eggs may be tested out after a week's incubation, and the good ones put together, thus reducing the number of hens. The same principle may be applied when the chicks hatch, again making a reduction of the foster-mothers.

A good-sized hen will cover from fifteen to twenty pheasant eggs. In arranging the clutches it must be remembered that periods of incubation differ with each species, or at least with each genus, none hatching under twenty-one days and some taking up to twenty-eight.

CHICKS

While the chicks are hatching the hens should be disturbed as little as possible. After twenty-four hours, a little food may be placed in the coop, when the hen will generally leave her nest to eat. If the chicks do not follow, they may be lifted out gently. Pheasant chicks are usually very wild and must be handled carefully. The first food usually consists of hard-boiled egg, mixed with bread or cracker crumbs. After the first day or two the feeding systems diverge into many channels. Each must have its own merits, for they all have many supporters. The one most usually followed, however, is the mash feeding. These mixtures are to be obtained from dealers in grains, or may be mixed by the breeder. It is best, however, to use prepared meals for a base, at least, as few amateurs have the facilities for mixing and baking complicated foods.

With the pheasant meal various ingredients are mixed, such as boiled egg, crissel, or other meat meal, and some finely chopped green food, such as chickweed, groundsel, chives or lettuce. Many breeders do not care for meat meal, and it is true that if fed in too great proportion it has a tendency to scour the birds, especially if it has stood long. It undoubtedly is beneficial, however, if used in proper quantities and with judgment. Green food is probably not necessary when the birds are on range, but it certainly can do no harm, and will ensure the young birds eating enough of this necessary item. For the more delicate species animal food in more abundance is necessary, and this is usually provided for the hardier birds, especially when on range, but will be found beneficial and even necessary for many birds.

The cheapest and one of the very best methods of procuring live food is in the propagation of maggots. Many persons are opposed to these larvae, but there is no doubt that they form a very valuable food if properly prepared. Young pheasants on range, especially Ring-necks, are able to find a quantity of live food sufficient for their needs, but even they, and certainly all birds in small quarters, are greatly benefited by a judicious use of maggots. If these are allowed to live and feed for a good forty-eight hours in dry bran, they are perfectly wholesome and can do no possible harm to the young birds. It is safer to scald them before feeding, but they are often given while still alive. It is the custom of many rearers to suspend meat about the field, allowing the young pheasants to eat the maggots as they drop to the ground. This is, of course, a very reprehensible habit, and doubtless has given rise to the condemnation of maggots as pheasant food.

THE REARING FIELD

Light, loamy or sandy soil is best adapted for the rearing of pheasants, and good drainage and a southern exposure should be secured if possible. The size of the field must depend, of course, on the extent of the ground available, but the head of birds to be reared should be governed by the field. Young pheasants cannot be overcrowded if they are to do well.

It is best to surround the field with poultry netting, to exclude foxes and dogs. If fine wire can be run into the ground, it will keep out ground vermin, and a good overhang will exclude rats. The field should be cultivated in the usual manner, and the approved rotation of crops applied. Of course, on a small field, a simple ploughing or spading will suffice, if grass seed is planted. The coops for the chicks should be placed at good distances apart in the field in the midst of the crop, so that the young birds may have room for foraging without interfering with their neighbours.

As soon as the chicks are strong enough, the coop which served them as a nesting house may be moved to the rearing field, where it will serve as a shelter for the growing brood. If the range is sufficiently large to allow the hen to run at liberty, this may be done after a few days. The chicks must be confined for three or four days in a small run of wire or boards (the one which served for the hen will do very well, although boards are better). They are very wild at first, and will leave the hen and hide in the grass until they have become accustomed to her. On the other hand, if it is necessary to confine her, it is easy to place slats on the door, or, better still, the door may be formed of bars in the first instance. Necessary shade for the chicks will be furnished by the coop, or may be provided by a small pile of brush.

The water must be kept cool. The question of water has caused a great deal of controversy. Many persons at one time considered water to be the cause of great mortality among young pheasants, and reared their birds entirely without it. This may be well enough in parts of humid England, where there is an abundance of rainfall, but in America, where the heat of early summer is often excessive, it is certainly better to provide drinking water. But it is essential that it be fresh and cool and never in the sun.

As the chicks' wings develop they will fly about and soon take to roosting outside. This is the critical stage with pheasants reared for sporting purposes, but the breeder of aviary birds simply clips their wings, or removes the birds to covered runs. Young birds of most species will not leave the rearing field even after they are fully feathered, but most breeders do not care to risk them at liberty after they reach the flying stage.

DISEASES

There are many diseases to which pheasants, as well as other birds in confinement, are subject. Naturally, individuals which are closely confined in aviaries are the chief sufferers, birds at liberty rarely being attacked. The number of the diseases with which they may be afflicted is large, although the majority are uncommon.

Pheasants make difficult subjects for treatment, because of their innate wildness. In most cases it certainly is wiser to destroy the affected bird, rather than to attempt a cure and often risk a spread of the infection. For these reasons only the most common and dangerous diseases are mentioned here.

Of the diseases which affect aviary pheasants, tuberculosis undoubtedly accounts for more deaths than all of the others combined. Birds imported from Continental dealers, who supply most of the birds which reach America, are very apt to be infected. Once this trouble has been introduced, it is eradicated only with great difficulty. Only the practised eye can detect tuberculous birds until they have reached almost the final stages, as they are usually so wild that fear impels them to a misleading activity in the presence of the observer. During cold weather the ravages of the disease are not noticeable, the vitality of the birds naturally being reduced. The only thing for the afflicted owner to do is to destroy the infected birds as they are detected and disinfect the runs they inhabited.

Pneumonia stands next to tuberculosis as a scourge of the aviary. It seizes the birds during autumn, winter and spring, and no remedy has yet been devised for averting its course. It is very contagious, and infected birds must be destroyed and disinfectant liberally used. It should be said that this and the preceding rarely attack birds which are at liberty or on range, but are most prevalent among those which are closely confined.

Roup, the common disease of domestic fowls, is often seen in pheasants, perhaps introduced by foster-mothers. The symptoms are running at eyes and nostrils, swollen eyes, a fetid odour and often whitish patches in the throat. Birds confined in damp enclosures are most likely to be attacked.

A great variety of remedies has been devised, none very efficient. Even the most obstinate cases will sometimes yield after prolonged treatment, but pheasants are difficult to handle, and in most cases local treatment several times daily is out of the question. The safest course to pursue is the destruction of infected birds as soon as detected, and thorough disinfection of the quarters they have occupied.

Aspergillosis is a fungoid disease, often confused with tuberculosis. An examination of the dead bird may disclose lesions of two sorts—small round nodules, massed or isolated, usually buried in the organs or tissues, and yellowish, cheesy growths of considerable extent and thickness, usually found in the lungs or abdomen, the exposed surface thickly covered with a greenish mould. Microscopical examination of this growth shows it to be formed by a fungus of the genus *Aspergillus*—most frequently *A. fumigatus*. This mould and its spores are almost invariably present in mouldy grain and straw, and birds coming in contact with them are easily infected.

There is no efficient remedy, and the afflicted breeder can only destroy sick or dead birds, and exercise greater vigilance in the selection of grain.

Cholera is a virulent and highly infectious disease, and a true scourge of the gamekeeper. Fortunately, its ravages in America are not, as yet, so extensive as they are on Continental preserves, where breeding has been carried on for a much longer period.

JUNGLEFOWL

Red Junglefowl are as rare as they are desirable, and it is only at long intervals that they are to be obtained. Their interest can hardly be over-estimated, for even the most casual visitor will be attracted by these noble little birds, looking like glorified bantams. They represent the ancestor of all our breeds of domestic poultry, and when this and other facts of their life history are understood, they will always form the centre of interest.

The first and second generations become very tame, and may be trusted with almost any other birds. Several of these birds were confined for a time in the large flying cage in the New York Zoological Park, and they each sought a lofty limb as a roost, forty feet or more from the ground. But when in a smaller enclosure they are contented with a low perch. Their care is similar to that of pheasants. The young are hardy and the hens may be trusted to brood and rear their own chicks. The adults stand our northern winters well, with a slightly warmed shelter in which to roost at night.

The birds breed freely, laying about eight eggs each year, and the only difficulty is in obtaining new blood. After several generations of inbreeding the birds increase in size and white feathers appear here and there in the plumage.

PEAFOWL

Peacocks are so well known that it would seem superfluous to do more than mention them, but judging from the large number of letters which I have received in past years at the New York Zoological Park, with inquiries concerning the care of these birds, their food and treatment are not familiar to many.

There are but two true species of wild peafowl in the world, the Common or Indian (*Pavo cristatus*) and the Green (*Pavo muticus*). The former is much the more abundant bird and the one most generally seen in captivity. It will stand almost any climate, and even in such severe humid cold as is experienced in New York City it requires only an open shed for shelter. Indeed, in the midst of a swirling snowstorm these birds may often be seen roosting on swaying branches high in the air, wholly unprotected, white with snow, but with head hidden deep under the warm feathers, defying the fury of the elements. These birds breed freely and the hens will take entire charge of the eggs and young birds.

Like other creatures which have been bred extensively by man, tame peafowl sometimes have young which are in part or entirely albinos. When a peacock is pure white—head, body and train—it is a very striking and beautiful object, especially when the snowy plumes are raised. Such a bird seems like the ghost of a real peacock.

Another sport or phase of colour is the black-winged or japanned peacock. The males are very dark, while the females are light. This, like the typically coloured Indian, is hardy and can be bred in any climate.

The Green Peacock, with its wonderful scaly mantle of golden green, is one of the most beautiful of all birds. It is far less hardy than the Indian species, and although it can be acclimated so that it will winter in an unheated building, yet the air should be kept above freezing point, and indeed it is much better to confine the birds during cold weather in a temperature of from 50° to 65°.

The peahen of both species may be allowed to have full management of her chicks. She can usually be trusted to lay her eggs in a safe place, and when it comes to defending them against danger, there is nothing that the brave bird will not face and attack.

Occasionally, however, the peahen proves to be a poor mother, and where peachicks are raised extensively the common barnyard hen is usually employed as mother. Even better, because of her larger size, is a hen turkey.

Under these conditions if the chicks have a run where they can catch insects they will need but little feed, except a mixture in the morning and evening of chopped lettuce, hard-boiled egg and prepared pheasant or game food. They will soon eat grain, and should then be given corn, wheat, barley or millet, with a small ration of leguminous vegetables.

If hatched in an incubator, a run about three feet wide, three feet high and twelve feet long is as good a size as any, one end of which should be covered in with boards or canvas.

A peahen usually lays three clutches of eggs each year, if the first are taken away and hatched by some other fowl. This first laying is usually the largest, but the number of eggs will run from five to nine.

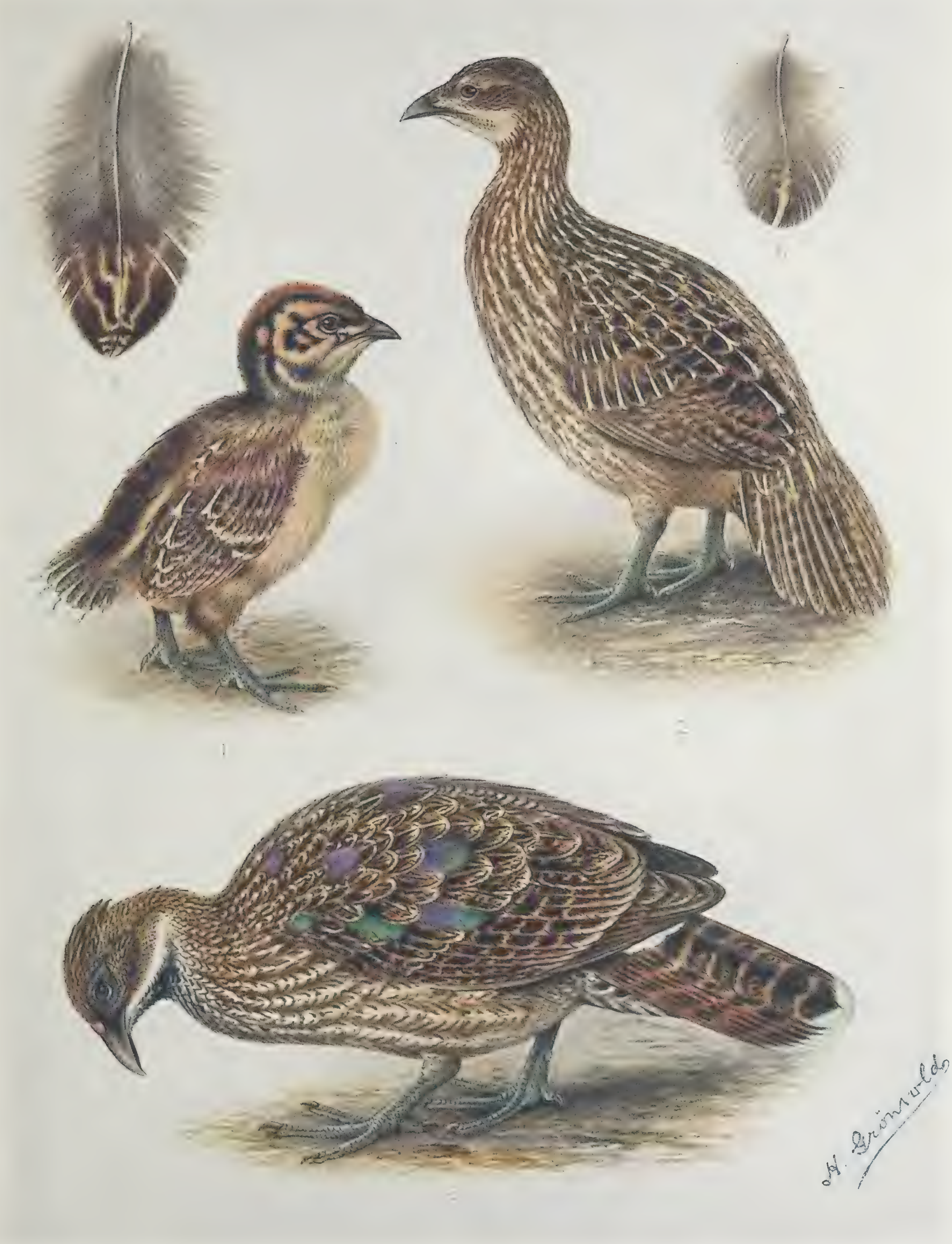
(*Omitted from Volume I, Page* 142)

PLUMAGES OF THE HIMALAYAN IMPEYAN PHEASANT

Lophophorus impeyanus (Latham)

FIG. 1. Chick in natal down, with the wing- and tail-feathers just sprouting.
FIG. 2. Male in full Juvenile Plumage.
FIG. 3. Male in First Year Plumage.
A. Dorsal Feather of First Year Plumage.
B. Dorsal Feather of Juvenile Plumage.

PLATE XV.



PLUMAGES OF THE HIMALAYAN IMPEYAN PHEASANT.

NOTE

In Volume II, p. 106, I stated that I could not accept *Acomus inornatus* Salvadori even as a subspecies. This decision was based on the fact of the apparent indeterminate variation shown by birds from all parts of the range and the consequent absence of distinguishable subspecific foci.

When I was working in the British Natural History Museum in 1918 the skins collected by Messrs. H. C. Robinson and C. B. Kloss in Sumatra in 1914 had not arrived. With these there were a number of *Acomus* which I had not thus the opportunity of seeing, all of which are said to show the characters of *A. inornatus.*

Mr. T. Wells of the British Museum, on his own initiative has very kindly called my attention to this matter, and sent me the data in regard to these skins, which are all from Sumatra. If in addition to the ten skins mentioned, there are besides "a good many skins" with these characters, collected in Sumatra, then a fairly satisfactory case is made for the occurrence of a subspecific focus in that island, and I am inclined thus to recognise this form:

Acomus erythrophthalmus erythrophthalmus (Raffles).

Habitat: Southern part of the Malay Peninsula and Sumatra, with subspecific focus in Johore.

Described in Volume II, pp. 105–107.

Acomus erythrophthalmus inornatus Salvadori.

Habitat: Sumatra.

Acomus inornatus Salvad.

Brief Description. Adult male.—Whole plumage entirely black, feathers of the head, neck, mantle, upper back, secondaries, rump, upper tail-coverts, chest and breast glossed with bluish bronze, each feather margined with velvety-black, tail and belly lacking the metallic gloss of the rest of the body.

Iris red or orange, orbital skin crimson-lake, greenish immediately round the eye, bill greenish-horn, feet whitish-slate, tinged with green.

Bill from nostril to tip, 19 mm.; wing, 213–227; tail, 152–170; tarsus, 69–77.

Seven specimens measured.

Adult female.—Feathers of the whole of the upper and lower surface buff-brown, inclining to ochraceous on the upper surface, vermiculated with black, each feather broadly edged with clear reddish-chestnut, giving the upper parts a rich chestnut appearance, rump and upper tail-coverts deeper chestnut, under-parts more ochraceous, tail blackish-brown.

Iris orange or orange-brown, orbital skin crimson-lake, a narrow ring round the eye greenish, a lemon-yellow square spot at the posterior angle of the eye, bill greenish-horn, feet pale greenish-slate. Wing, 208–228 mm. ; tail, 145–150 ; tarsus, 65–69.

Three specimens measured.

SYNONYMY

Acomus inornatus Salvad. Ann. Mus. Civ. Gen. xiv, p. 250 (1879) ; id. P.Z.S. 1879, p. 651, pl. xlviii. [Mt. Singalan, w. coast of Sumatra] ; Buttikofer, Notes Leyden Mus., ix, p. 77 (1887) [Padang, W. Sumatra] ; Vorderman, Nat. Tijd. Nederl. Ind., xlix, p. 413, no. 424 (1889) ; Ogilvie-Grant, Cat. Birds B. M., xxii, p. 285 (1893) ; Robinson and Kloss, Journ. Fed. Malay States Mus. viii, p. 101, pl. iv (1918) [Kornichi Peak, Sumatra].

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